



USER'S MANUAL
second issue



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IT IS THE RESPONSIBILITY OF THE OPERATOR TO CARE ABOUT CUSTOMER SAFETY AT ALL TIMES. PLEASE READ AND OBSERVE THE NOTES ON SAFETY DESCRIBED IN THIS MANUAL.

About TUNING RACE

Thank you for purchasing a Gaelco's product. This manual explains how to safely operate your TUNING RACE® machine. Failing to operate the machine correctly could result in malfunction or accident, so please read the manual carefully before starting operation, specially the SAFETY NOTES (Section 3).

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Note: Operator's Manual Specifications are subject to change without prior notice

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TUNING RACE® has been manufactured in accordance with European Community directives. Any changes or modifications to this machine has to be authorised by Gaelco S.A. and must be in accordance with the CE directives.

Using spear parts that do not fit specifications will void the warranty. Removal of serial numbers and/or bar codes from product or components will void the warranty.

Published by:
GAELCO S.A.
Escipión 11
08023 Barcelona - SPAIN
Tel. ++34 93 417 36 26
Fax ++34 93 417 28 02
e-mail gaelco@gaelco.com
web www.gaelco.es

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part A of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operating in a commercial environment. This equipment uses, and can radiate radio frequency energy, if not installed and used according to the instruction manual, and may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Gaelco - Tuning Race



1. GENERAL INFORMATION

1.1 MANUFACTURER AND MACHINE DATA

Manufacturer	Gaelco, S.A.
Address	Escipión 11
ZIP	08023
City	Barcelona
Country :	Spain
Tel.	34 93 417 36 26
Fax	34 93 417 28 02
e-mail	gaelco@gaelco.com
Technical Service	sat@gaelco.com

Name of the game	Tuning Race®
Model	Motion

1.2 LEGISLATION REFERENCES

EM EMISSION

- EN 61000-3-2 (1995), Harmonics
- EN 61000-3-3 (1995), Fluctuations
- EN 55022 (1994), Continuous conducted emission (Class A)
- EN 55022 (1994), Radiated emission (Class A)

EM IMMUNITY

- EN 61000-4-2 (1995), ESD
- EN 61000-4-3 (1996) & ENV 50204 (1995), Radiated field of RF
- EN 61000-4-4 (1995), EFT burst
- EN 61000-4-5 (1995), Surges
- EN 61000-4-6 (1996), RF common mode
- EN 61000-4-8 (1993), 50 Hz H-field
- EN 61000-4-11 (1994), Dips, interruptions

ELECTRICAL SAFETY

UNE EN 60335-1 (1997) + Erratum (1997) + A11 (1997) + A12 (1997) + A13 (1999) + A14 (1999) + Erratum (1999).

Note: Test passed in Motion Test mode

1.3 TECHNICAL SERVICE

Gaelco S.A. or its Distributors carry out technical service.

1.4 RESPONSIBILITY

Any modifications made to this machine that are not authorised in writing by the manufacturer will be considered to be at the exclusive responsibility of the operator, who will consequently become the new "manufacturer" and must operate in compliance with the European Community directives.

In case of an accident caused by a defective part, the manufacturer will assume responsibility only if the machine was defective in its original condition. However, this responsibility shall be diminished or even totally annulled if the operator or the player do not follow the instructions provided or if the operator uses spare parts that are not covered by guarantee, are not authorised in writing or do not correspond to the specified technical characteristics.

2. SPECIFICATIONS

DIMENSIONS AND WEIGHT

1) Crate dimensions and shipping weight of each module

	width	depth	height	weight
Monitor cabinet	1000 mm	800 mm	1935 mm	205 Kg
Platform	1000 mm	1500 mm	1538 mm	325 Kg

2) Dimensions and net weight of each module unpacked

	width	depth	height	weight
Monitor cabinet	880 mm	685 mm	2165 mm*	190 Kg
Platform	1228 mm	1480 mm	1370 mm	310 Kg

* With the billboard

3) Total dimensions of the machine, installed on site

width	depth	height
1240 mm	2465 mm	2165 mm

POWER SUPPLY

Operating Power: 220-230 VAC, 50 Hz
Output: +5VDC 20A, +12VDC 8A

MONITOR

34" Hantarex Polo/2 STAR PH, code 01297790

CPU BOARD

PCB Gaelco TUNING RACE

CONTROLS

- Interactive steering wheel with gear shift
- Start button, placed on dashboard
- View button, placed on the dashboard
- Accelerator pedal
- Brake pedal
- Emergency Stop button, placed on top of the coin tower

MOTION SYSTEM

Degrees of freedom: 2 DOF

Actuators: 2 induction motors (geared), 0.75KW each

Control: 2 frequency inverters SKA11200075, input voltage 230V +/-10%, 50/60Hz

ATTACHMENTS

Operator's Manual	(1)
Motor driver manual	(1)
Monitor Manual	(1)
Coin box keys	(2)
Monitor cabinet keys	(3)
Power cord (3m long)	(1)
Link cable	(1)
Monitor cable (remote control)	(1)

3. SAFETY NOTES

In order to use this machine safely please read carefully this Manual BEFORE the installation, use or maintenance of the machine.

This Operator's Manual and others manuals delivered with the machine must be available to the operating and service personnel.

When transporting or reselling the machine, be sure to attach this Manual.

The TUNING RACE machine has been designed for indoor use only, within residential or commercial areas, and must be used exclusively for the purpose intended.

GAELCO S.A. bears no responsibility for accidents, injury or damage resulting for unauthorized changes or improper use of the machine.

WARNING

To avoid accidents or damages, it is imperative to follow the notes on Safety resumed bellow, as well as all those included in the following sections:

- SECTION 4. MATERIAL HANDLING
- SECTION 5. UNPACKING, ASSEMBLING & INSTALLATION
- SECTION 9. TECHNICAL SERVICE

3.1 GENERAL SAFETY CONSIDERATIONS



- Before operating the machine, check that it has been installed correctly and in accordance with this Manual.
- As some parts of the machine move during game play, there are places where the distance between the stationary section and the mobile section changes. Despite the measures implemented to avoid accidents, if the operator feels that a person is in any danger, he should warn that person or stop the machine immediately by using the Emergency Stop button.
- The warning notices (stickers) must be kept in such condition that customers can read them easily.
- Installation, service or routine maintenance should be carried out by qualified personnel.
- Before connecting the machine to the mains supply, verify that it is set for the correct voltage and that the proper fuses are already installed.
- When replacing fuses, use spare fuses of the same type and rating than the originals. The use of other material can cause serious damages on the electronic circuits or even a fire hazard. Check the Parts List to know the exact specifications.
- The machine includes areas of high voltage. Care must be taken at all times to avoid electrical shock whenever inspecting or adjusting the equipment, particularly around the monitor.
- To ensure safe operation, the machine must be grounded with a plug securely connected to Earth.
- Do not turn ON the power switch until the machine has been installed on its dedicated place.

If there is any error or problem with this machine, operation must be stopped immediately.

3.2 SAFETY PRECAUTIONS CONCERNING LOCATION



Do not place the machine where it might be an obstacle in case on emergency (i.e. close to fire extinguishers or emergency exits).

Install and operate the machine in places where appropriate lighting is available, so warning labels can be clearly read by the customers.

This machine has been for indoor use only, within residential or commercial spaces. Absolutely do not set up the machine outdoors or under the following conditions:

- Direct exposure to sunlight, high humidity, water contact, dust, high heat or extreme cold.
- In locations near containers holding liquids or liquid dispensing equipment. In general, precautions should be taken against spilling liquids of any kind whatsoever over the machine
- In a place exposed to vibration. The machine must be installed on a level surface with levellers properly adjusted.
- In locations near ventilating holes. Doing so could cause internal temperature to rise excessively, resulting in equipment failure.
- Near hazardous substances

Furthermore:

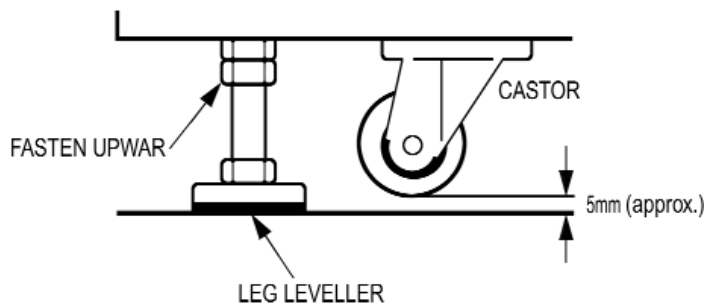
- In order to have easy access to the PSU, CPU and control devices, please make sure that the rear and sides of the machine are separated from the wall or other machines by at least 300mm (12")
- Ventilation slots must be not obstructed, and the machine must be positioned so as to leave a distance of at least 100mm (4") from possible obstructions
- Do not run the power cord across passages where pedestrian's feet could get caught on the cord.
- Ensure that the location's power supply is equipped with an Earth Leakage Breaker rated at 30mA.

GAELCO shall not be held responsible for any damage resulting from the failure to observe these instructions.

3.2.1 SECURING IN PLACE

Ensure that all the leg levellers make firm contact with the surface of the floor. This precaution is crucial for the TUNING RACE version with motion system, because the machine can move of itself, causing an accident.

After making the adjustment of all legs, secure the height of each one by fastening upward the nut.



3.3 PRECAUTIONS TO BE HEEDED WHEN MOVING THE MACHINE



The machine can easily moved by using their castors. When moving the game machine, always retract the levellers to the extreme up position, so the castors can make contact with the floor. Please ensure that the levellers are raised fully when moving the machine, even for short distances. Furthermore:

- Do not use the handlebar or the rear handle to move the platform (rider assembly), unless the levellers are raised fully.
- When moving the machine on slopping or uneven surfaces or across steps, proceed with extreme caution to avoid the risk of being crushed!
- If there are steps or step-like differences in grade, move the machine by separating into each unit. Be sure to catch the bottom part.
- During transportation, pay attention so that de castors do not thread power cords.
- Ensure that there is enough room to get through doors or to avoid any collision with elements hanging from the ceiling. Read section 4 to know the dimensions of the machine.

The two units of the machine are not equipped with lifting rings. It is therefore absolutely prohibited to lift them with ropes or belts!

3.4 PRECAUTIONS TO BE HEEDED DURING OPERATION



Please heed the following indications in order to ensure the safety of the customers when using this game machine. Be sure to read and get a good understanding of each item:

- Before starting the operation, please check if all the level adjusters are in firm contact with the surface of the ground. If they are not, the cabinet can move and cause an accident.
- Do not use the machine as support for other objects.
- Do not put on the machine or near by any kind of receptacle containing chemicals or water.
- Ensure to provide enough space around the machine to avoid the risk of injury or trouble. Insufficient installation space can cause the player to come in contact with spectators or hit them.

In order to avoid injury and accidents, it is not allowed to use the machine to those persons who fall under the following cases:

- Intoxicated persons.
- Persons susceptible to motion sickness.
- Persons who are not in good health, such those having problems of high blood pressure or heart malfunctions.
- Pregnant women
- Persons whose acts do not observe the warning notices.
- Persons who could be unable to support themselves being sitting (disabled people, small children, etc.).

Despite the machine is fitted with protection hoods to avoid access to potentially dangerous places, do not allow customers to put hands, fingers or extraneous matter in any opening of the cabinet.

3.5 SAFETY DEVICES CONCERNING THE MOTION SYSTEM

The TUNING RACE / MOTION machine has an EMERGENCY STOP BUTTON placed on top of the coin tower, which can be easily activated by the player or the operator at any time. The game keeps running but the motion stops until the button is unlocked manually by turning it clockwise.

The action of this device reduces the possibility of an accident resulting from sudden sickness or improper use of the machine while it is moving.

4. MATERIAL HANDLING

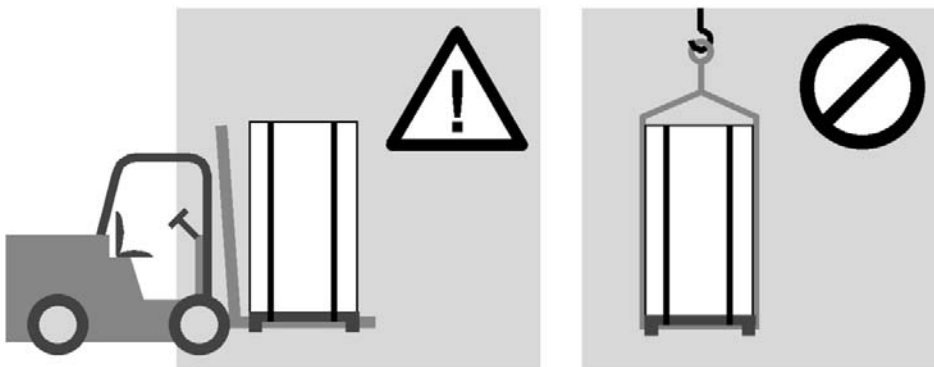


This machine should be transported or moved by trained persons. Failing to do so could result in injury or product damage. Please be very careful.

4.1 TRANSPORT OF PACKAGED UNITS

The packaged machine must be transported in a closed means of transport with sufficient carrying capacity for the gross weight of the machine, which is 205Kg for the monitor cabinet and 325Kg for the platform. The machine must remain packaged on its pallet and must be suitably secured to the means of transport. It is very important that the lifting forks are pushed right to the back of the wooden pallet, to give optimum stability to the load.

CODE	width	depth	height	crate weight
MONITOR CABINET	1000 mm	800 mm	1935 mm	205 Kg
PLATFORM	1000 mm	1500 mm	1538 mm	325 Kg



It is not allowed to lift the packed machine with ropes or belts, as the package is not equipped with suitable lifting points for this type of transport.

4.2 STORAGE

Store the packed machine in sheltered and dry areas. Temperatures allowed: maximum +45°C / minimum -5°C.

4.3 RECEPTION

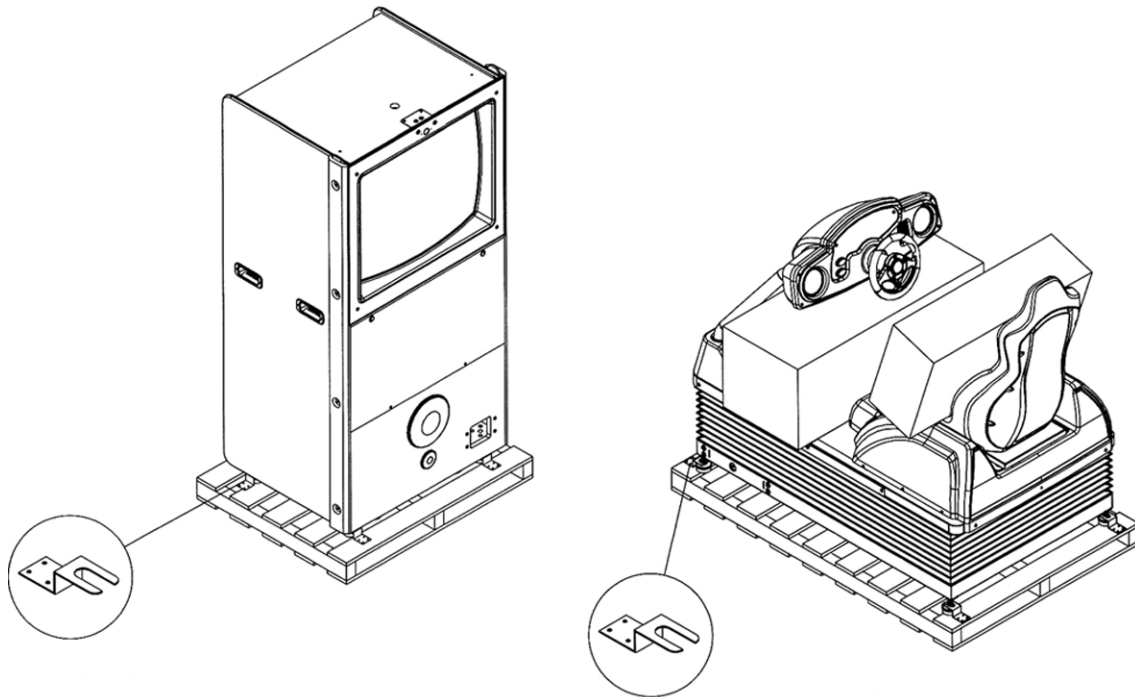
The TUNING RACE packaging should be carefully inspected upon receipt to ensure that the product is delivered in good conditions.

Shipping damage may void warranty. In case of shipping damage, contact your Distributor and the Transportation Carrier immediately. See section 5.1 for further inspection.

5. UNPACKING, ASSEMBLING & INSTALLATION

It is best to unpack the machine where it is going to be used or in a place as near as possible to this. Two people are needed to lift the cardboard packaging over the top of each unit.

Once the packaging is removed, the machine looks as shown in the illustration.



5.1 INSPECTION BEFORE ASSEMBLING

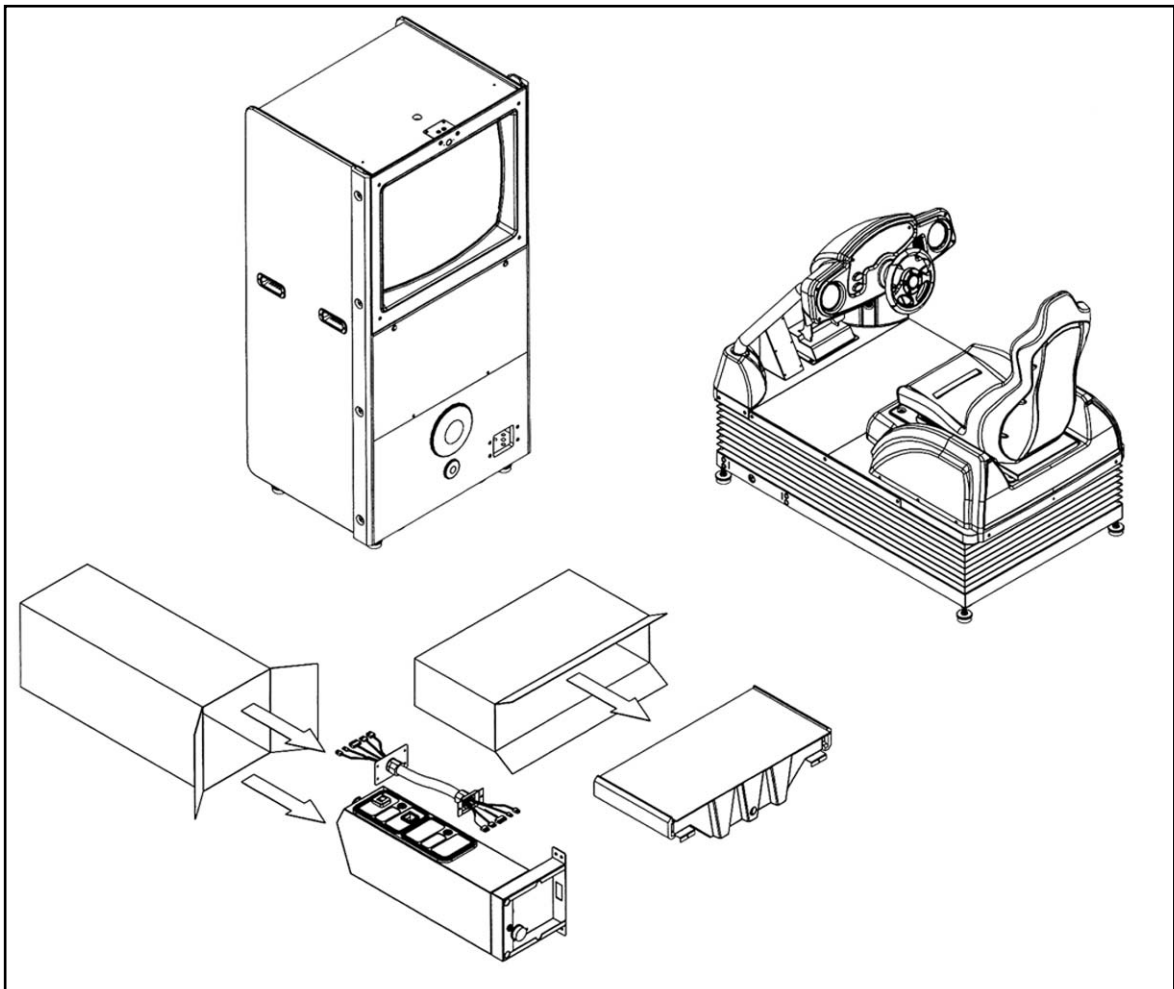
Normally, GAELCO products are ready to assemble immediately after transporting to the location. Nevertheless, some mishandling may occur during transportation. Check the following points to ensure that the machine has been properly delivered:

- Examine the cabinet exterior for dents, chips, or broken parts
 - Verify that castors and levellers are not damaged
 - Inspect the major assemblies, such as the video display monitor, handlebar and seat. Make sure that they are mounted securely and that all ground wires are firmly connected.
 - Ensure that the power supply voltage and frequency requirements meet those of the location.
 - Ensure that the fuses already installed meet the specified rating and type.
 - Inspect the power cable to ensure that it is not damaged.
 - Verify that the keys delivered with the machine open all doors.
 - Check if all the accessories are included.
-

5.2 ASSEMBLING & INSTALLATION

To assemble the machine proceed as follows:

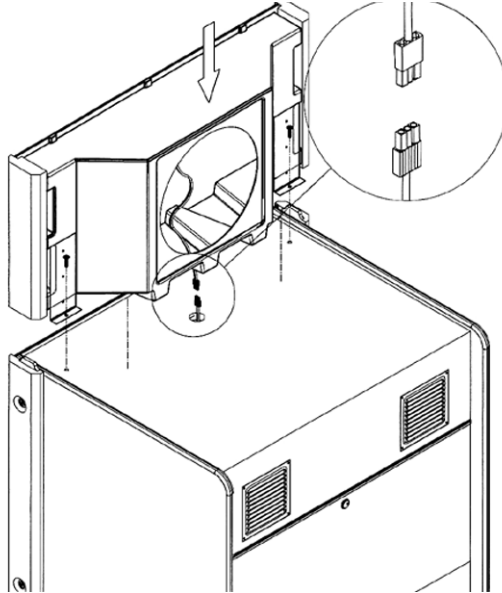
1. Take out the boxes containing the accessories.
2. Remove the metal brackets that fix each unit to its pallet.
3. Raise the leg levellers and put the units down on the floor with the help of a ramp. Be very careful to avoid the risk of being crushed!



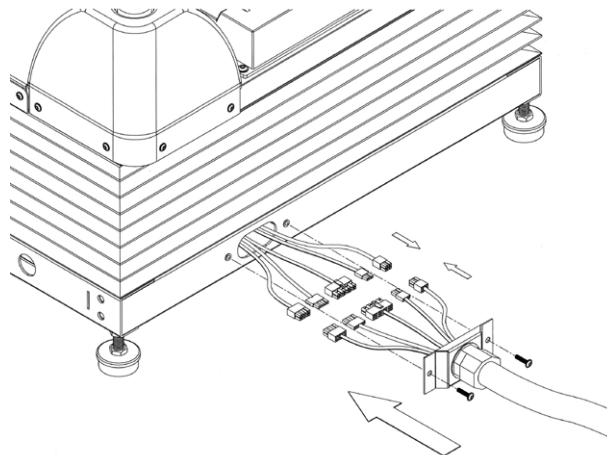
4. Place the monitor cabinet is at its final location and strictly follow the instructions described in section 3.2. Ensure that the cabinet is level, then secure the height of the leg levelers by fastening the adjuster nut upwards.

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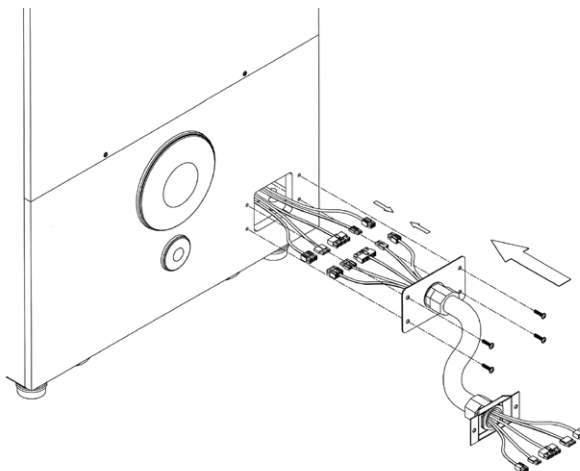
5. Assemble the billboard on the top of the monitor cabinet, **using a step**. Do not climb on the cabinet! The screws that fix the billboard are already installed on its place. Remove those screws and use them for fixing the billboard. Plug the connector of the fluorescent tube.



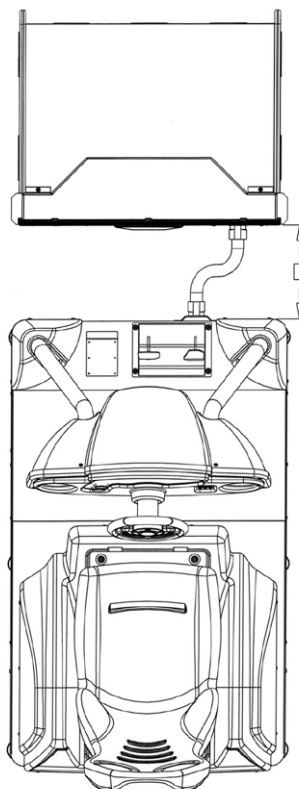
6. Proceed to assemble the two units together. This must be done where the machine is to be used. First of all make sure the monitor cabinet is level. Then follow the steps below:
7. Connect the harness to the platform and fix it. The screws are already mounted on its place. Loose them and screw them again fixing the harness plate.



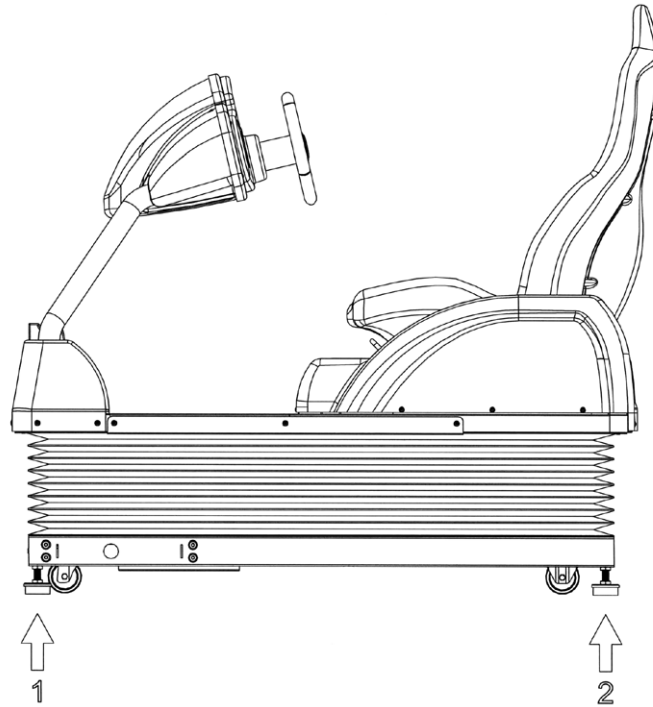
8. Approach the two units so you can connect the other end of the harness to the monitor cabinet. The screws that fix the harness plate are already installed on its place.



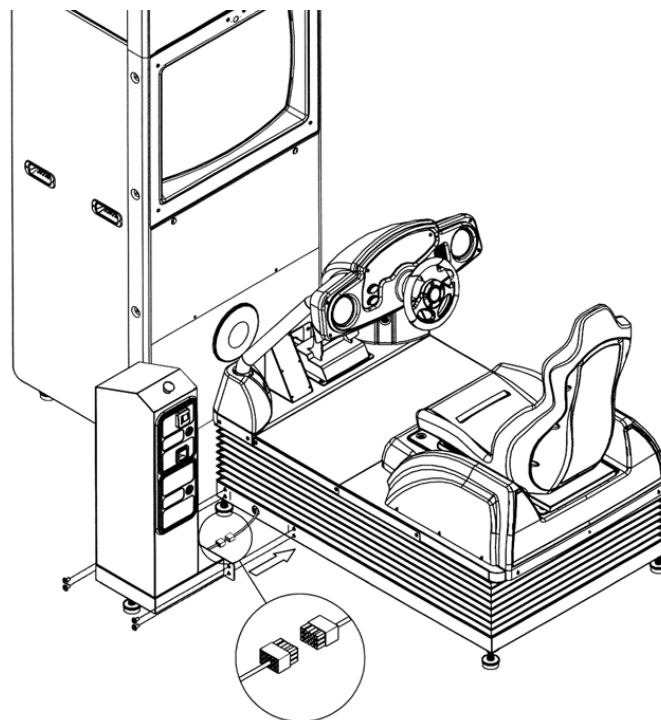
9. The gap between the platform and the monitor cabinet should be about 300mm (12"). When this condition is respected, the harness makes a gentle "S" as shown in the picture.



10. Level the platform . The levellers of the middle (number 3 in the drawing) should be adjusted the last ones.



11. Carefully adjust all the levellers so that the whole machine rests firm and level on the floor. (See section 3.2.1). Remember that the platform contains a motion system!
12. Proceed to assemble the tower to the platform. First of all connect the cable, then fix the tower. The screws for that purpose are already installed on its place. Loose them and screw them again fixing the tower. Adjust the leveler of the tower.



13. If the machine has to be moved, though a little bit, retract the leg levellers.
To clean the game machine, wipe with a soft cloth damped with a neutral detergent and wrung out. Using organic solvents like thinner may damage the plastic parts.

5.3 GETTING READY TO START



BEFORE SWITCHING ON THE MACHINE, PLEASE CHECK THAT THE INTALLATION FITS ALL THE REQUIREMENTS DESCRIBED ON CHAPTER 3 (SAFETY NOTES) AND ESPECIALLY THOSE OF SECTION 3.2

The installation of the machine at its final site should be carried out by trained people. Mains power must be always be turned off, and the machine unplugged, before replacing any part or handling connectors. Please check the following points again:

- The area chosen for the machine is well away from heat sources.
- The machine does not obstruct emergency exits.
- The whole machine is level and stable on the floor. The leg levellers are secured in place.
- The power cord can be plugged into a grounded receptacle that provides the specified voltage and frequency.
- The mains supply is equipped with an Earth Leakage Breaker rated at 30mA.

5.4 SWITCHING ON THE MACHINE

The mains switch is located in the compact filter assembly, which also contains the fuse and the socket for the mains cable. It is found in the back of the monitor cabinet.

To start the machine, push the switch to position "I".

The machine can be switched OFF (position "0") whenever necessary. If a game is in progress on the machine, the credit will be lost.

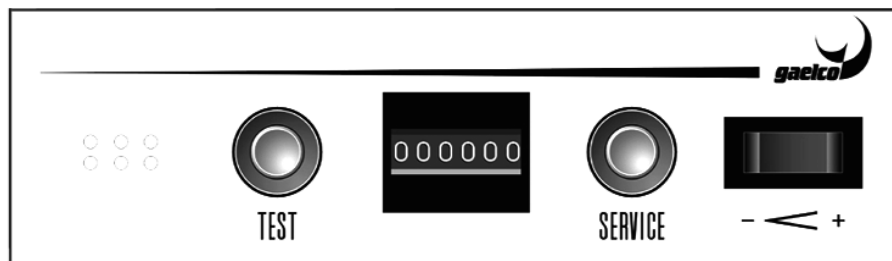
To avoid possible damage to the electronic components, wait several seconds before turning the machine on again.

6. MACHINE SETTINGS AND TEST MODE

An automatic check of the memories is made when the machine is switched on. This coincides with the presentation of the Screen Test. After a few seconds, if no error occurs, it automatically goes on to show the game. The interface is also adjusted dynamically each time that a machine is switched on. Any other adjustment should be made in TEST MODE.

The access to the TEST MODE as for the other controls -monitor, sound, etc.- is made from the CONTROL PANEL, which is situated behind the coin box door. This panel consists of a button to access TEST MODE, a coin counter, a SERVICE button, and a commuter to adjust the VOLUME of the loudspeakers.

Pressing the TEST button enters TEST MODE, where the game variables, such as level of difficulty, linkage of machines, etc., can be adjusted. A check of the motion system and other controls can also be made. The SERVICE button allows the technician to introduce game credits without moving the coin counter.



The main menu of TEST MODE offers the following options and information:

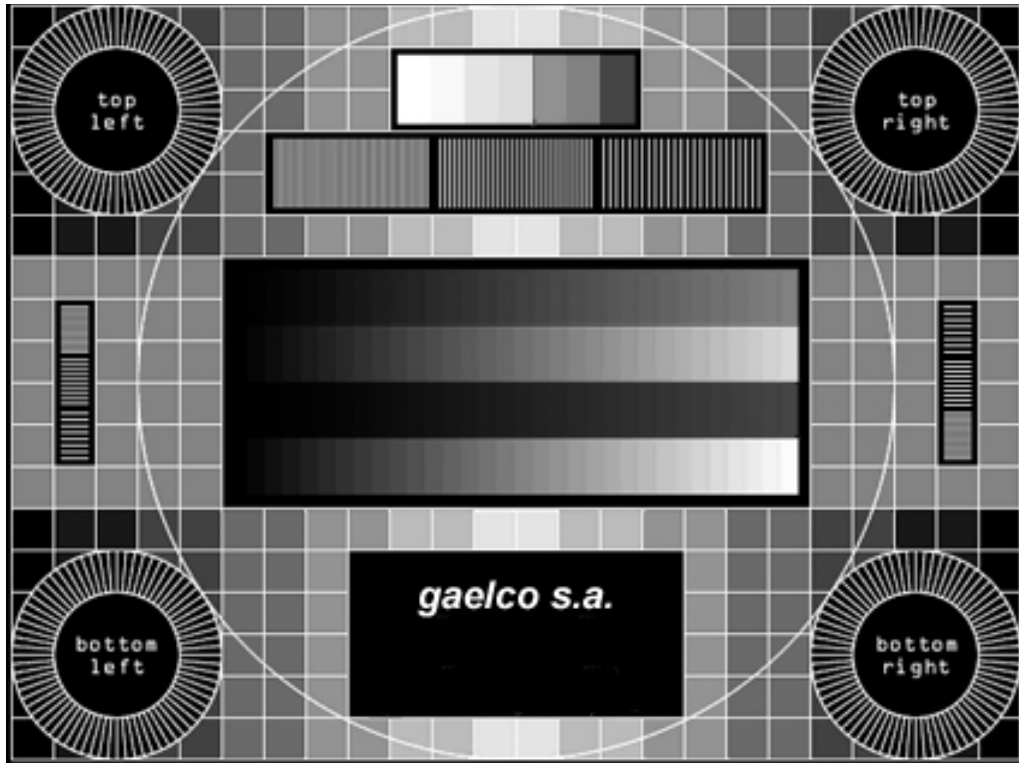
Screen test Controls Sound Motion system Settings Camera Link Tournament settings Scoreboard Book-keeping Exit	options
Serial number: Code date: Graphics date:	information

You can choose the option required by pressing the gear shift levers assembled with the steering wheel. The left lever moves the cursor up, while the right lever moves the cursor down. Pressing the Start button or the accelerator pedal makes the selection.

To make sure that the changes that have been made are kept permanently, you must not switch off the machine without first leaving TEST MODE with the option **Save changes and exit** from the **Exit** menu.

6.1 MONITOR TEST

This screen is the ADJUSTMENT CARD, which should be used to suitably adjust the monitor. It shows you, also, information about the installed software version.



You can return to de Main Menu by pressing the START button or the accelerator pedal.

6.2 CONTROLS TEST

This screen enables you to check the correct functioning of all controls of the machine. The device to be tested is selected by using the gear shift levers, assembled with the steering wheel.

CONTROLS	
Start Button:	off
Emergency Button:	off
Service: Button:	off
Test Button:	off
View: Button:	ON
Gear Up:	off
Gear Down:	off
Volume Up:	off
Volume Down:	off
Coin 1:	off
Coin 2:	off
Brake pedal:	0.00 (119)
Gas pedal:	0.00 (099)
Steering wheel:	0.04 (135)
Keyboard:	no key pressed

To exit, press Gear Up and Gear Down at the same time

Warning! When checking the EMERGENCY STOP, remember that the message displayed on the screen is OFF when the button is released. So, if the message is "ON", it means that the button is working (motion system disabled). Once pushed, the button will remain mechanically locked until you turn the red knob clockwise.

To return to the main menu, push both levers at once as indicated on the screen.

6.3 SOUND TEST

This screen allows you to check the whole sound system.

SOUND
Sample: 1
Music:
Volume: 50
Bass level: 100
Left loudspeaker: OFF
Right loudspeaker: ON
Subwoofer: OFF
Exit

As for the previous screens, the selection of the required option is made by means of the shift gear levers. The Volume can be adjusted with the Volume commuter of the Control Panel placed behind the coin door. The Bass level can be adjusted by pushing the START button. The same button is used to enable or disable the other options.

To leave this screen go to the Exit option and press the START button or the accelerator pedal.

6.4 MOTION SYSTEM TEST

This screen enables you to check some functions related to the motion system.

MOTION SYSTEM
Emergency button
Left motor:
Position:
Right motor:
Position:
Mode: SOFT 0.75kW
Motion test:
Exit

There are the following options:

Emergency button

Shows the position of the emergency stop button (Off=released / On=locked). Please refer to section 6.2 for further details.

Left Motor / Right Motor

These options allows you to make a manual test of each motor. The selected motor moves forward when the right lever is pressed, while the left lever controls it backwards. The information belonging to **Position** shows the position of each motor. A reading of **60** should refer to the higher position (shaft crank in vertical position). The rest position of the platform should match with a reading of **-60**.

Mode

The Mode option is used to enable or disable the motion system. When **ENABLED**, the motion can be selected to **SOFT** or **HARD**. The **1.1kW** or **0.75kW** setting refers to the model of motor installed on the machine. It should be kept as it comes programmed from factory.

Motion Test

When selecting this option, the platform moves automatically, following a repetitive pattern.

You leave the menu by choosing the **Exit** option and then pressing the START button or the accelerator pedal.

6.5 SETTINGS

On this screen you can change the following game parameters:

SETTINGS	

COIN CONTROLLER 1:	
Coins:	1
Credits:	1
Pulses:	0
COIN CONTROLLER 2:	
Coins:	2
Credits:	1
Pulses:	0
Time:	12:23:03
Date:	16 March 2005
GMT:	+0
Credits to start race:	1
Credits to continue race:	1
Credits to start Tournament:	2
Credits to start Exclusive T.:	2
Free play:	NO
Exhibition sound:	YES
Difficulty:	NORMAL
Language:	ENGLISH
Exit	

As for the previous screens, the parameter is selected with the gear shift levers, then changed by pressing the **START** button or the accelerator pedal.

Coins / Credits

On this option you can adjust the number of credits (game price) that the machine gives for a defined number of coins. The machine can work with two coin acceptors (USA).

Credits to start race

Here you can program the number of coins required to start a race game.

Credits to continue race

When this option is enabled, the player can start a game from the last stage passed on the previous game.

Credits to start Tournament

Credits to start a game corresponding to an automatic Tournament.

WARNING: The number of credits to start a Tournament (either Standard or Exclusive) can not be lower than the number of credits to start a race. If this condition is not fulfilled, the machine will make the appropriate corrections automatically.

Credits to start Exclusive Tournament

Credits to start a game corresponding to a customized Tournament.

Time

Time setting by default is **Greenwich Mean Time** (GMT+0). The user adjusts the time for the arcade location by adding or subtracting hours to GMT, depending on the **time zone** and the **Daylight Saving Time** of his country. For example, if the arcade is located in Germany, one hour should be added to the GMT, according to the time zone for continental Europe. Furthermore, another hour should be added or subtracted depending on the season. In this particular example, time setting would be GMT+2 from the last sunday of March to the last sunday of October, and GMT+1 for the rest of the year.

WARNING: Time adjustment is very important when the machine is connected on line to play tournaments.

Free Play

This option allows you to play without inserting coins.

Exhibition sound

By means of this option you can program the machine for sound production (or not) when it is in exhibition mode.

Difficulty

This options allows you to adjust the level of difficulty of the game. There are three levels: easy, normal and hard.

Language

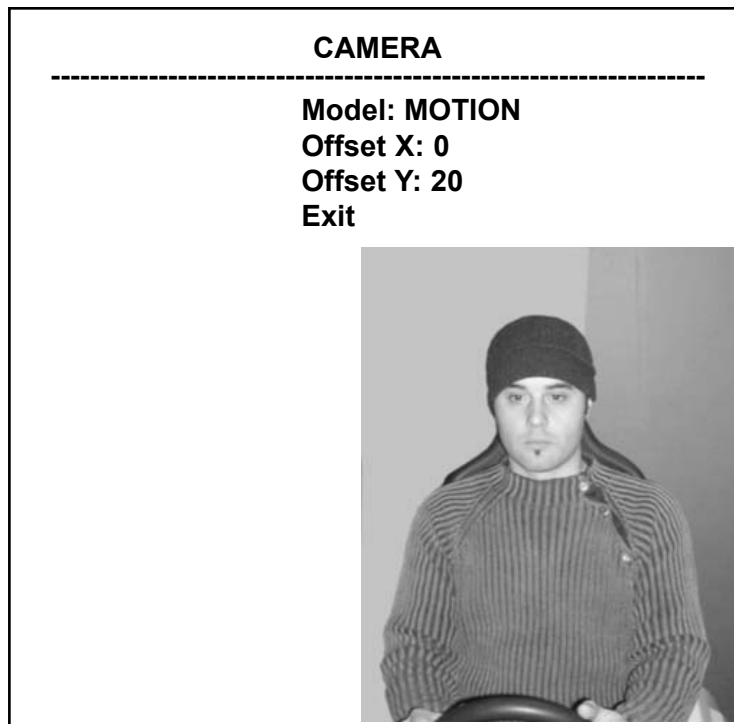
Using this option can change the language of the messages shown on the screen. The languages available are: English and Spanish

To leave this menu go to the **Exit** line and press the **START** button or the accelerator pedal.

6.6 CAMERA

There is a digital camera on top of the monitor cabinet, for the purpose of identifying players when they take part in a tournament.

When the **Camera** option is selected, the objects and persons within the scope of the camera are shown in the screen. The image is in black and white, not in color.



The available options are:

Mode

This option allows you to select the size of the image frame according to the model of machine being used.(STANDARD or MOTION).

Offset

The image frame can be moved in two directions -X and Y- when necessary.

Exit

Select this option and press the START button or the accelerator pedal when you want to quit.

6.7 LINK SETTINGS

TUNING RACE allows you to connect up to four machines, so several players can compete head to head. The connection is detected automatically, when the link cable is plugged. When just **TWO** machines are linked, proceed as follows:

1. Switch off the machines.
2. Take one crossover link cable (supplied with each machine) and plug it on the RJ45/8 connectors, placed on the rear bottom of the monitor cabinets.
3. Switch on the machines.
4. Enter **Link** menu and select **Link mode** on both machines.
5. Select **Player 1** for the machine placed on the left side, **Player 2** for the machine placed on the right side.

LINK

Link mode: Player 2

Test

On line: YES

Base IP mode: DYNAMIC

Remote IP: www.gaelco.es

Base IP: 090.000.000.232

Netmask: 255.255.255.000

Gateway/ Proxy: 090.000.000.001

Location:

Group:

Country: SPAIN

Test

Exit

When **MORE THAN TWO** machines have to be linked, it is necessary a **network switch** working at **100Mbps**. In that case all machines could be plugged to the network switch. Proceed as follows:

1. Switch off the machines.
2. Take as many cables as machines. If you can't find a network switch with automatic polarity detection, the link cable supplied by Gaelco is not suitable, as it is a crossover Ethernet cable. In that case you have to use normal patch cable.
3. For each machine, plug one end of the link cable to the RJ45/8 connector. The other end is plugged to the network switch.
4. Switch on the network switch, then switch on the machines.
5. On each machine, select the **Link mode** option. Assign a number to each machine, beginning from left: Player 1 for the top left machine, Player 2 for the next to the right, Player 3 for the next and so on. This facilitates the identification of each player during the game.

The **Test** option allows you to know the communication status of one machine with the other linked machines. **When linked, all machines must run the same software.**

ON LINE CONNECTION

If the machines will run connected to Internet, TUNING RACE allows you to assign the IP address automatically, by selecting **DYNAMIC** on the option **Base IP mode**. All fields related with the IP address will be defined by the machine, without any further intervention from your side.

On the contrary, selecting **STATIC** allows you to define these fields manually. In both cases, the selection should be the same for all machines linked together.

WARNING: When several machines are linked, **Player 1** machine keeps the data base of the group, storing all data related to scoreboard, records and statistics. But, as soon as the machines are connected **on line**, the data base of the group is managed by the **server**.

To leave this menu go to the **Exit** option and press the START button or the accelerator pedal.

6.8 TOURNAMENT SETTINGS

TUNING RACE allows to play tournaments. There are two formats of tournament, **Standard** and **Exclusive**. The **Standard** tournament is available by default and runs automatically, without any further setting. It is a monthly tournament that works with the **Time Attack** modality. Players have to surpass 8 challenges (4 circuits X 2 wether conditions). The winner of the tournament is the player who reaches the higher score.

TOURNAMENT SETTINGS

STANDARD TOURNAMENT
Standard Tournament Periode: 1 MONTH
End of current cycle: 30 APRIL 2005
EXCLUSIVE TOURNAMENT
Exclusive Tournament activated: NO
RESET EXCLUSIVE TOURNAMENT
RESET ALL TOURNAMENTS
EXIT

The **Exclusive** tournament can be customized by the operator, after choosing **YES** on the **Exclusive Tournament activated** line. The following entries are available:

Start Date:

End Date:

Challenge: type of challenge (in this example would be FREEMONT STREET with dry track and Time Attack format).

The operator can write his own advertising message, with a headline and 8 text lines. To quit, select **Exit** and press the START button or the accelerator pedal.

When the **Exclusive Tournament** is activated, the following options are available:

TOURNAMENT SETTINGS
Tournament available on this machine: YES
STANDARD TOURNAMENT
Standard Tournament Periode: UNDEFINED
End of current cycle: 30 APRIL 2005
EXCLUSIVE TOURNAMENT
Exclusive Tournament activated : YES
Start Date: 01 MARCH 2005
End date: 31 MARCH 2005
Challenge: FREEMONT STREET/DRY TRACK/ TIME ATTACK
ADVERTISING MESSAGE
Headline
Line 1
Line 2
Line 3
Line 4
Line 5
Line 6
Line 7
Line 8
RESET EXCLUSIVE TOURNAMENT
RESET ALL TOURNAMENTS
EXIT

In order to simplify the scoring system, the Standard Tournament remains standing by when the Exclusive Tournament is running. In other words, once the operator enables the Exclusive Tournament, the automatic one will NOT be available until the Exclusive Tournament finishes.

The RESET EXCLUSIVE TOURNAMENT allows you to delete the scores of the customized tournament, while the RESET ALL TOURNAMENTS option is used to delete the scores of both tournaments, Exclusive and Standard. Confirmation is requested to make effective the reset.

To quit this menu select **EXIT** and press the START button or the accelerator pedal.

6.9 SCOREBOARD

This screen shows the scores and classifications for all available games. When playing a tournament, players are allocated automatically in three classes or categories -A, B and C- according to their skill level. All players start at class C and move to B or A as they pass tournaments. The three classes are operative after the second tournament.

SCOREBOARD

Class: C
Players scores
Current RACE records
Current LAP records
Current STANDARD TOURNAMENT classification
Current EXCLUSIVE TOURNAMENT classification
Previous STANDARD TOURNAMENT classification
Previous EXCLUSIVE TOURNAMENT classification
Delete RACE records
Delete players scores
EXIT

Records and scores can also be deleted from this menu, using the two last options. Confirmation is requested to make the reset effective.

When you want to leave, select **EXIT** and press the START button or the accelerator pedal.

6.10 BOOK-KEEPING

The book-keeping screen shows the the following information:

BOOK KEEPING		

Total time (hh:mm) :		0050:20
Play time (hh:mm) :		0016:48
Shortest play (mm:ss) :		01:46
Longest play (mm:ss) :		11:34
Average play (mm:ss) :		02:48
Total credits :		00346
Service games :		00008
Start games 1PI :		00310
Start games 2PI		00285
Start games 3PI		00093
Start games 4PI		00078
Continue games		00046
Delete Book keeping		
Exit		

Reading from top to bottom:

- Total time the machine is connected in hours and minutes
- Total time the machine is busy in hours and minutes
- Time of the shortest play in minutes and seconds
- Time of the longest play in minutes and seconds
- Time of the average playt in minutes and seconds
- Total number of credits
- Credits entered with the SERVICE button
- Credits owned for the coins entered (one player against the machine)
- Credits owned for the coins entered (two players competing)
- Credits owned for the coins entered (three players competing)
- Credits owned for the coins entered (four players competing)
- Credits entered using CONTINUE (starting a game from the last stage passed on the previous game).

All data stored in the book keeping can be deleted using the last option. Confirmation is requested to make effective the reset.

To leave this screen, select **Exit** and press the START button or the accelerator pedal.

6.11 LEAVING THE TEST MODE

To quit the TEST mode, go to the main menu and select the **Exit** option. Pressing the START button or the accelerator pedal opens the following menu:

EXIT without saving changes
SAVE changes and exit
RETURN to main menu

There are two options available to actually quit the TEST mode and return to PLAY mode. **EXIT without saving changes** is used to quit when you don't care about the changes made previously. Otherwise, if you want to keep the changes, use **SAVE changes and exit** to leave TEST mode.

Press the START button or the accelerator pedal to confirm any option.

7. HOW TO PLAY

TUNING RACE is a car racing game where players drive sport prototypes that can be tuned and customized. The game has two formats: **Arcade Race**, where players race by themselves against the computer or head to head on the same track, and **Tournament Time Attack**, where each player competes against the clock, in order to get the better lap time.

The **MOTION** model includes a realistic driving feedback with a platform that moves with two degrees of freedom, following the evolution of the race.

This is a single player motion machine, which can be linked to another three (up to 4 players competing at once).

Game rules

- To win, the player has to cross the finish line first, after completing a specified number of laps.
- The ranking is made according the time consumed to finish the race, total time for the **Arcade Race** mode or lap time for **Tournament-Time Attack**.-

Game features

- Two game modes: Arcade Mode and Tournament Mode.
- In Tournament Mode, operators are allowed to set up their own tournaments, either locally or on-line with different locations (for ranking purpose only).
- There are four different prototype cars to choose from.
- Players can customize an tune their cars during the game.
- There are four circuits to look after, each circuit with its own specific level of difficulty. Furthermore, there are three different weather conditions (dry, damp and wet) that add variety to the driving difficulty. This makes a total of 12 different tracks to play.

- In the **Arcade-Race** mode, the player gets points for his driving skills, as overtakes, skid control, top speed on bends, combos, race record and lap record. These points are accumulated game after game, then exchanged for car accesories in the "Tuning Shop" (vinyls, rims, bumpers, spoilers, exhausts, tinted windows and luckycharms).
- In the **Tournament-Time Attack** mode, there is recognition lap that allows the player to set up the motor before the race. He can stop at any time and adjust the technical features of the car, as gear ratios, tires, aerodynamics, engine balance, brake balance and suspension. The race is done with the reference of a "ghost car" that reproduces the fastest lap in the choosen circuit. A new record will be established if the player crosses the finish line before the ghost car, which does not interfere in the race, simply fades or gets solid depending on the closeness to the player's car.
- A keyboard has been installed in the cabinet, allowing the player to insert his pin number. Every time he inserts the pin in the machine he originally played with, or the one that is linked to (the CPUs can pass information to each other), he will start the game wherever he left off. The machine will also provide him with his position in the ranking.
- TUNING RACE can be connected to Internet. If that were the case, all the above information would be stored in Gaelco's server and be provided to the player in any Tuning Race machine connected to Internet.

Starting the game

To start to play it is necessary to put enough coins to cover the price of at least one credit. The number of coins introduced is shown together with the number of coins necessary to obtain one credit. For example, if the programmed number of coins per credit is two, the displayed message will be, step by step: "Credits 0 / 2", "Credits 1 / 2" and "Credits 1". The cost of a credit is programmed from Test Mode (see section 6.4, SETTINGS).

When the necessary coins have been put in, the message "INSERT COIN" changes to "PUSH START BUTTON". By pushing this button the player can choose the game options.

8. TOURNAMENTS

TUNING RACE allows to play two modalities of tournament: **Automatic Tournament**, programmed from the factory, and **Exclusive Tournament**, that can be customized by the operator. Both tournaments are based on the **Time Attack** format.

Tournaments can be held in a single machine or in several linked machines, up to a maximum of four. Linked compete against a “ghost car” representing the record of the circuit, not head to head.

Furthermore, it is possible to organize tournaments with an unlimited number of machines, connecting them on line through Internet, either Automatic or Exclusive modalities. In this case the data base is managed by a server, available to each operator.

8.1 TOURNAMENT MODALITIES

Automatic Tournament

Programmed by deffect from factory. This is a periodical tournament that runs automatically, without the intervention of the operator for the setting up. The period of the tournament can be monthly (programmed by deffect) or quaterly.

Players are allocated automatically in three classes or categories -A, B and C- according to their skill level. All players start at class C and move to B or A as they pass tournaments. A minimum number of players is required to make use of this classification.

The attached table shows an overview of the tournament management depending on the total number of players.

Number of players	9N	27	36	45	54	63	72	81	90	99	108	117	126	135
Class A	N	3	4	5	6	7	8	9	10	11	12	13	14	15
up & down		1	2	2	3	3	4	4	5	5	6	6	7	7
Class B	2N	6	8	10	12	14	16	18	20	22	24	26	28	30
up & down		2	2	3	3	4	4	5	5	6	6	7	7	8
Class C	6N	18	24	30	36	42	48	54	60	66	72	78	84	90

If the operator enables the Exclusive Tournament, the Automatic one will NOT be available until the Exclusive Tournament finishes. If an Exclusive Tournament is running when the class update of the Automatic Tournament should be done, this class update will be postponed to the end of the next period.

Exclusive Tournament

The operator can set this tournament by choosing the circuit, weather condition and period of time that the tournament will run. There is also the option of writting an attracting message related with the tournament.

Players are classified in three categories according to the data collected on Automatic Tournament mode. If this information is not available, the player will be automatically allocated in class C.

Once the operator enables the Exclusive Tournament, the Automatic one will NOT be available until the end of the Exclusive Tournament.

8.2 ON LINE TOURNAMENTS

The operator can also organize tournaments with an unlimited number of machines sited in different locations, using Internet. In order to have a dedicated ranking table, the operator should request a Group Identifier (kind of password) to connect these machines to Gaelco's system. In that case the tournament data base will be managed by the server, not by any machine.

When one machine is connected on line but no Group Identifier is used, it will be allocated in an open, universal group, where only Automatic Tournament can be held. In that case, the operator can not control any parameter of the tournament.

The connection to the server is established through the **LINK** menu explained in section 6.7. TUNING RACE allows you to assign the IP address automatically, by selecting **DYNAMIC** on the option **Base IP mode**. All fields related with the IP address will be defined by the machine, without any further intervention from your side.

On the contrary, selecting **STATIC** allows you to define these fields manually. In both cases, the selection should be the same for all machines linked together.

8.3 DATA BASE MANAGEMENT - OFF LINE / ON LINE

When a machine is playing in tournament mode, it always competes alone against the record in despite of the fact that it is linked or not. When several linked machines run **off line**, the data base is kepted by the master machine (number 1). But, as soon as the machines are connected **on line** with Internet, the data base will be managed by the server, exclusively. If the machines are connected on line in the middle of an off line tournament, the data base of the master machine will not be transferred to the server but will be kepted standing by. In other words, off line tournaments and on line tournaments are totally independent.

8.4 HOW TO ENTER IN TOURNAMENT MODE

If it is the first time for the player to enter in a tournament, he/she is requested to insert a **name** and a **pin code**. These personal data are recorded in the specific data base for the current tournament, in order to register the player. Since then, he/she can use the pin code to load the game and go ahead with the tournament. The name is displayed on the classification board.

The rules for the tournament are shown on the screen and each step of the process is explained with very clear instructions.

9. TECHNICAL SERVICE

9.1 PRIOR CONSIDERATIONS

Technical service and maintenance must be carried out by qualified staff.

No modifications shall be made to the machine unless these have been approved by the manufacturer in writing. Failure to observe this requirement may cause damage or accidents and will automatically render the guarantee null and void.

If any task needs to be performed which is not described in this manual, please contact the distributor for instructions. The manufacturer declines any liability for damage and injury arising from failure to comply with this requirement

Do not attempt to repair the CPU. It contains sensitive chips that could easily be damaged by even the small internal voltage of a meter. Always return the CPU to your distributor for any repairs.

9.2 SAFETY PRECAUTIONS



- Before commencing work on the machine, maintenance staff must read this manual carefully and check that all of the safety norms concerning the installation and use of the TUNING RACE machine. Maintenance staff must advise the operator of any irregularities they observe so that the latter can take the appropriate measures to put matters right.
- The machine must be disconnected from the power supply before beginning any kind of maintenance work (changing parts, repairs, etc.), except where this is confined to a simple check on whether the machine is working properly. Hold the plug when unplugging the machine - DO NOT PULL ON THE CABLE !
- Parts of the power supply unit (PSU) and the monitor remain hot or store high voltage even when the machine has been unplugged. Do not touch these parts as electric shock or burns may result.
- Make sure there is plenty of room for maintenance to be carried out. At least 3 metres should be left free between the machine itself and other objects (e.g. adjacent machines, walls, etc.).
- When parts need replacing, use only those approved by Gaelco S.A. and which meet the relevant specifications.

9.3 MOTION SYSTEM - BLOCK DIAGRAM

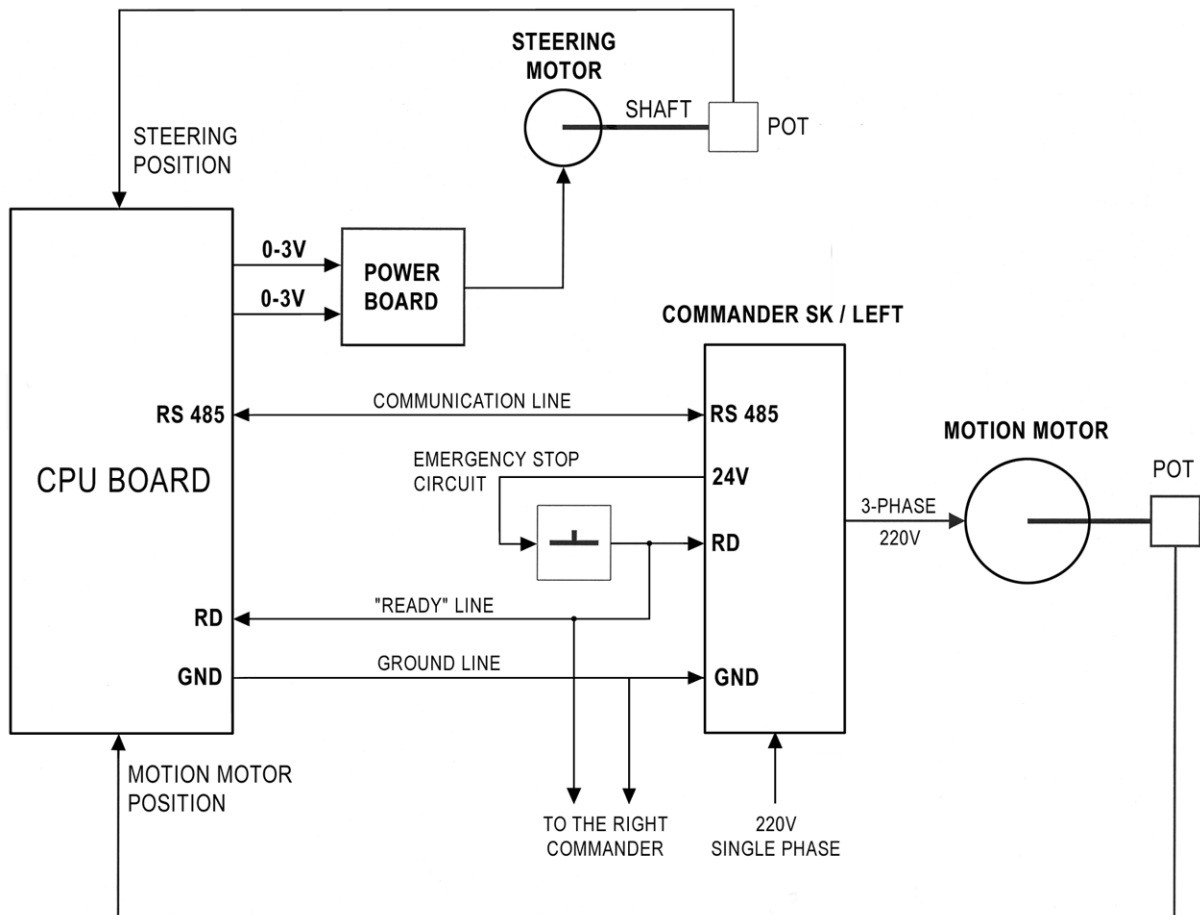
For a better understanding of the motion system, please refer to the diagram below.

The CPU Board (TRM-357) provides two analogic signals (0-3V) to the Power Board (TRM-358). These are the inputs of the DC driver, which controls the steering motor with a +/- 24V output.

The platform is moved by two AC motors. Each motor is driven by a frequency converter that is communicated with the CPU board through a RS-485 connection.

These drivers also have a "ready" input (RD). When the input level is high (24V), the drivers are operative and transmit to the motors the orders given by the CPU board. If the Emergency Stop button is activated, the RD input falls down to 0V and both drivers are disabled.

The high level (24V) is generated by the left driver, drawn in the block diagram below. The right driver is not shown.



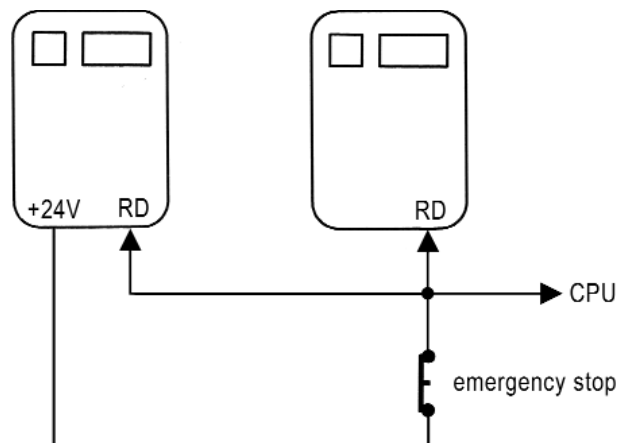
The position signals processed by the CPU come from potentiometers coupled to the shafts of the motors.

9.4 EMERGENCY STOP

The motion system includes an emergency stop which is operated by a red knob on top of the coin tower. The emergency circuit-breaker is connected in series so that it will bring the car to a standstill (see the block diagram of section 9.3). Should the movement system not work, the cause may lie in: either of the stop switch; in the cables; or on the CPU board. Actually, the emergency stop button activates two circuits: one runs through the CPU and only serves to give a screen warning that the button has been pressed. The other circuit is the real emergency stop, which does not run through the CPU but acts directly on the frequency converters governing the AC motors.

The following steps must be taken before finding the fault:

1. Open the front door of the monitor cabinet.
2. Remove the Faraday cage which covers the motor drivers (see the exploding 10.8). This reveals the LED displays which provide information on the state of each driver.
3. To check the emergency stop circuit, go to the MOTION SYSTEM screen in Test Mode and select the line "Security". If the red knob is in the rest position (circuit closed, movement possible), the message will read OFF. When the red knob is pressed, the message will change to ON (circuit open, motors stopped). When the knob is turned clockwise, the movement system is ready to operate. The message turns back to OFF (movement system ready).



However: the previous check only covers the signal processed by the CPU but the problem could lie in the actual security circuit which goes directly to the drivers. It should be noted that the CPU does not detect whether the security circuit is operative but only that the emergency stop button is being pressed. To check whether this is the case, select the Motion Test from the MOTION SYSTEM screen while in Test Mode. Refer to the circuit diagram in following the steps below:

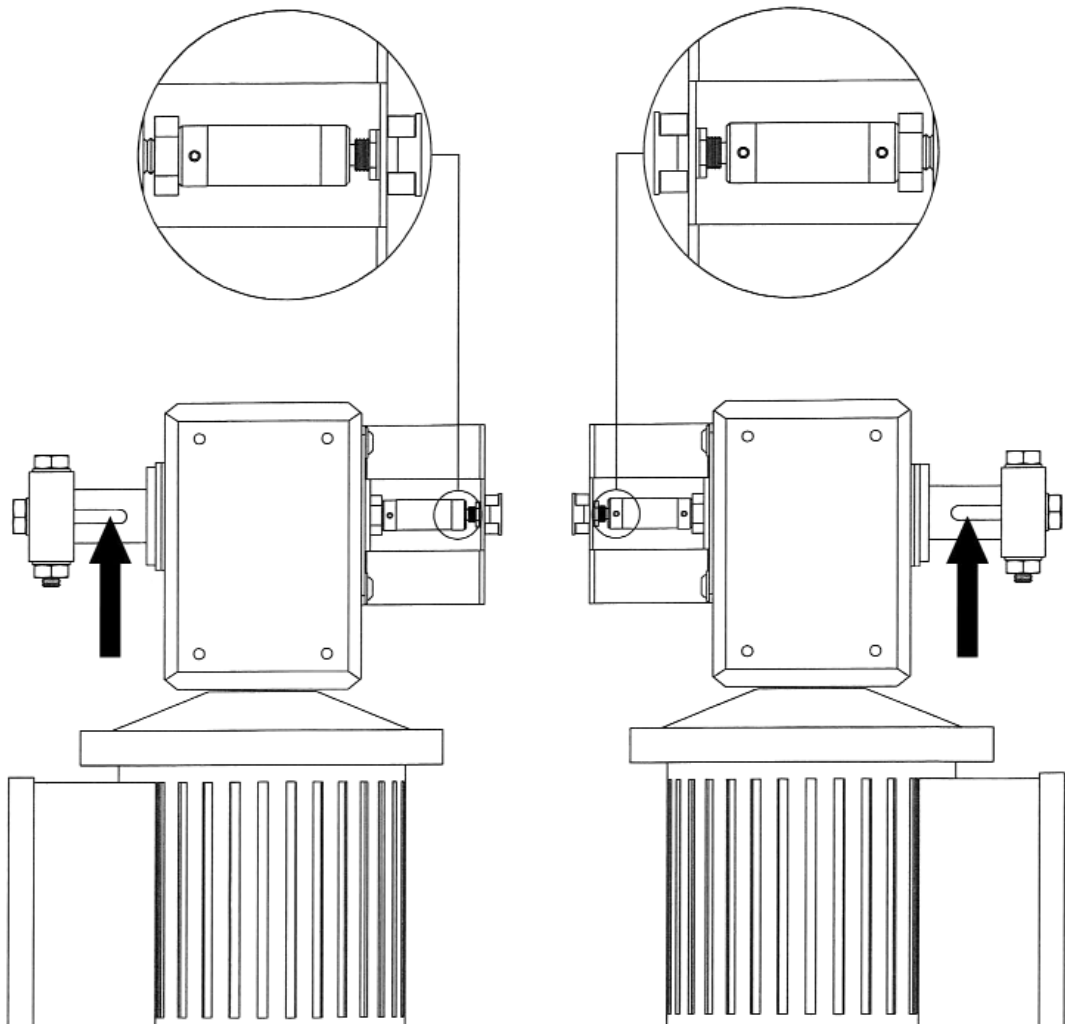
Under normal conditions, when the button is in the rest position (i.e. not pressed), the message "rd" will appear in the left-hand window of both drivers. However, if the message is "ih", this indicates that the circuit remains open for some reason (e.g. bad connection, damaged cable, faulty button, etc.). The stop message will appear on the monitor screen, consisting of an image of the stop knob and an acoustic warning.

The most likely fault would be a short-circuit if the message of the drivers is neither "rd" nor "ih" and there is no stop message on the monitor.

9.5 POSITION POTENTIOMETERS

If the movement system is not working properly, the position potentiometers (TRM-305) should be checked and changed if necessary. The following points need to be borne in mind in this connection:

1. In Test Mode, go to the MOTION SYSTEM screen.
2. When the shaft lever is completely upright, the woodruff key will also be in the upright position. Reach this position using the Left motor / Right motor options (see section 6.3), then read the "Pot" information for each motor. It should be 60 for both motors, approximately.
3. Viewing the motors from above, when the shafts are in the position indicated, check that the grub screw of the elastic couplings are in the same position as shown in the drawing. The left elastic coupling has the grub screws mounted in opposite, while the right coupling has the grub screws aligned.



9.6 COMMANDER SK SETTING

The Commander SK is a programmable electronic drive. There is a list in Section 10 of the drive manual that shows the values by default set at the factory for control parameters. However, some values are modified by the Tuning Race CPU in order to get the appropriate performance for the application. The affected parameters are detailed in the table below:

Par.	Description	0.75kW	1.1kW
	LEVEL 1		
03	Acceleration rate (s/100Hz)	0.5	
04	Deceleration rate (s/100Hz)	0.5	
06	Motor rated current (A)	4.00	
07	Motor rated speed (rpm)	1435	1445
09	Motor power factor (cos Φ)	0.71	0.82
	LEVEL 2		
17	Enable negative preset speeds	ON	
22	Load display units	A	
23	Speed display units	SP	
30	Ramp mode select	FAST	
37	Maximum switching frequency (kHz)	12	
41	Voltage mode select	Fd	
42	Low frequency voltage boost (%)	0.5	

Values for parameters 7 and 9 are set from the **Motion System** menu, according to the model of motor installed on the platform (0.75kW or 1.1kW). This setting is made at the factory and should not be changed.

If the motion system does not work properly and symptoms point out to a possible failure of a drive, the technician can check the value of each parameter following the instructions given in Section 5 of the drive manual. The access to the different levels is set from parameter 10.

Furthermore, the drive may display an error message. In that case, Section 8 of the drive manual explains the possible causes of each trip code.

If any parameter of the Commander SK does not match with the value shown in the list, or the drive displays a trip code, please report to the Technical Service of Gaelco s.A.

WARNING: If you install a new drive that has not been supplied by Gaelco, the advanced parameters 11.24 and 11.26 must be programmed properly, otherwise the CPU will not communicate with the drive. The way to set these parameters is the following:

0. Please read section 5.3 of drive manual (Control Techniques).
 1. Set L3 on parameter 10 and quit.
 2. Go to parameter 71, select 11.24 with the arrows and quit.
 3. Go to parameter 61, select 0 and quit.
 4. Go again to parameter 71, select 11.26 and quit.
 5. Go back to parameter 61, select 0 and quit.
 6. Press M button during 2 seconds to leave parameter edit mode.
-

9.7 TROUBLESHOOTING PROCEDURES

1) PROBLEM: The machine does not start when the mains switch is thrown.

- Check the mains cable and its connections.
 - Check the fuses. Check the specifications are met. Check whether the fuses have blown and that they have the correct current rating. The fault may have been caused by an overload current.
 - Check the CPU connections
 - Check there is +5V DC in the power supply.
-

2) PROBLEM: There is something wrong with the screen colours and/or image.

- Enter in Test Mode and adjust the monitor settings with the help of the screen test (see Section 6.1)
-

3) PROBLEM: The game starts but the platform fails to move.

- Check the emergency stop button is not pressed.
 - Check that the connections between the monitor casing and the game platform are not loose and that the cables are undamaged.
 - Check that the frequency converters work properly (i.e. no error message)
 - Check the Power board (TRM-358): If the fuses have blown, it is likely that the power transistors have short-circuited.
-

4) PROBLEM: The platform moves but does not match the game action.

- Enter the MOTION SYSTEM screen in Test Mode and check that the platform is at its highest point when taking the reading position of both motors. The reading should be 60. If this is not the case or the platform leans to one side, check the position potentiometer following the procedure described in Section 9.5.
 - Check that the centering screws (TRM-829) are properly tightened on their respective shafts.
 - Check that the elastics couplings (TRM-819) are properly connected.
-

5) PROBLEM: The platform moves very slowly, then stops.

- Check the position potentiometers are working properly and that none of the cables have broken.
-

6) PROBLEM: The machines do not work when they are linked up.

- Check that the link cable properly connects the two machines.
 - Follow the instructions in Section 6.5 (Link Settings).
-

7) PROBLEM: There is no sound or it is of poor quality.

- Change the volume on the Control Panel.
 - Carry out a sound test (see Section 6.5)
 - Check the connections.
-

8) PROBLEM: The gear shift fails.

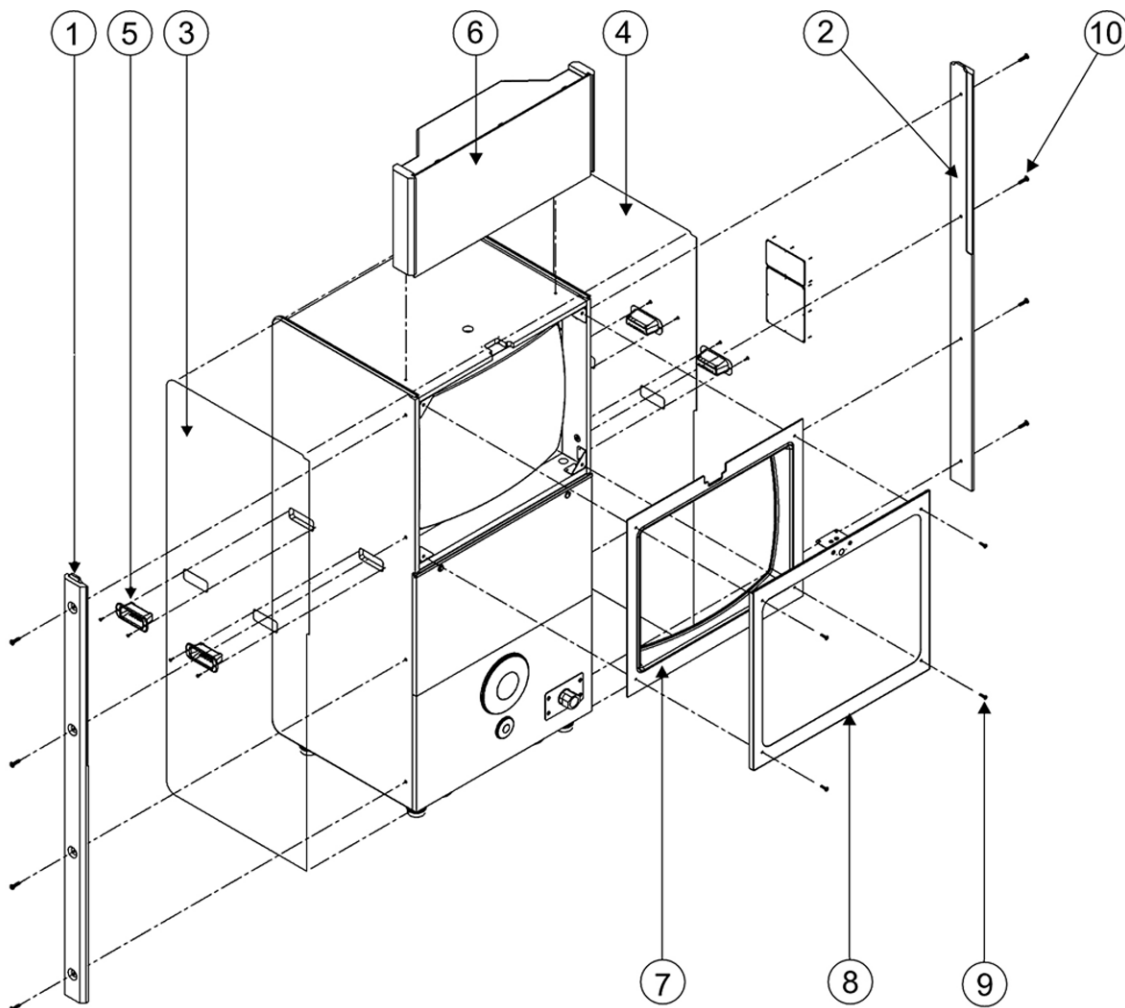
- Enter in **Controls** menu and check if the malfunction is permanent or not, holding the lever pressed while the steering wheel is turned from one stop to the other..
 - Check the connections of the harness at both ends.
-

TECHNICAL SERVICE: Tel (34)934173626 • e-mail: tuningrace@gaelco.es

10. PARTS LIST

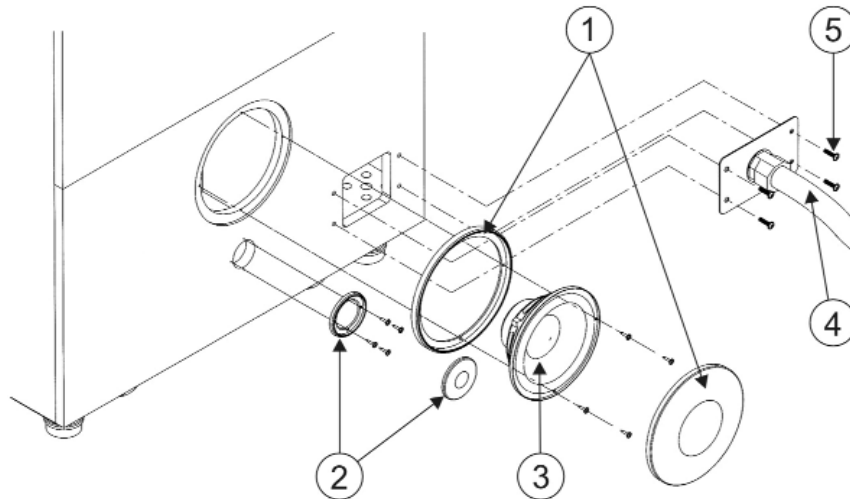
10.1 MONITOR CABINET – ACCESSORIES

	CODE	DESCRIPTION
1	TRM-131	SIDE COVER - LEFT
2	TRM-132	SIDE COVER - RIGHT
3	TRM-502	STICKER - LEFT
4	TRM-503	STICKER - RIGHT
5	TRM-434	GRAB HANDLE, plastic
6	TRM-515	BILLBOARD ASSEMBLY
7	TRM-510	PLASTIC FRAME - monitor
8	TRM-224	METAL FRAME - monitor
9	--	SCREW UM1001 M6X20 Z
10	--	SCREW UM1001 M8X40



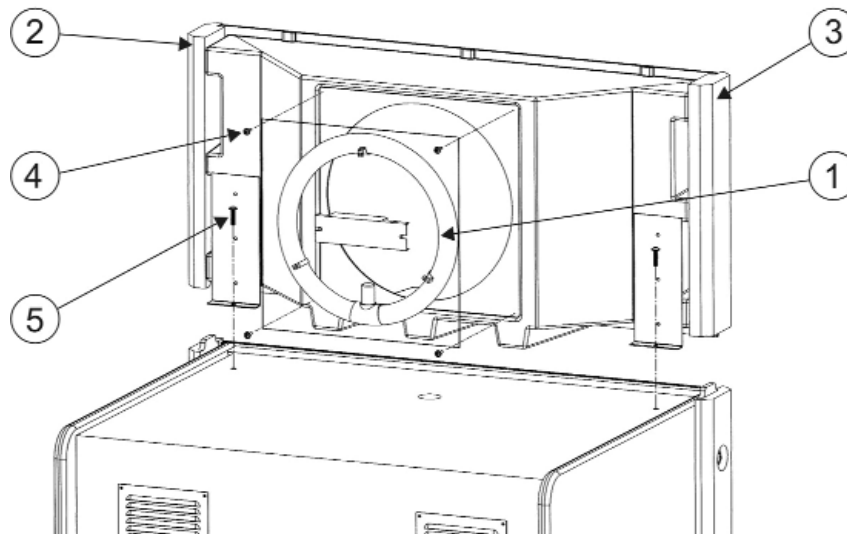
10.2 MONITOR CABINET – SUBWOOFER PARTS

	CODE	DESCRIPTION
1	TRM-375	8" GRILL (subwoofer)
2	TRM-376	2" GRILL
3	TRM-362	8" SUBWOOFER 100W/4Ω
4	--	UNION HARNESS (see section 1.3)
5	--	SCREW UM1001 M6X30 BLACK



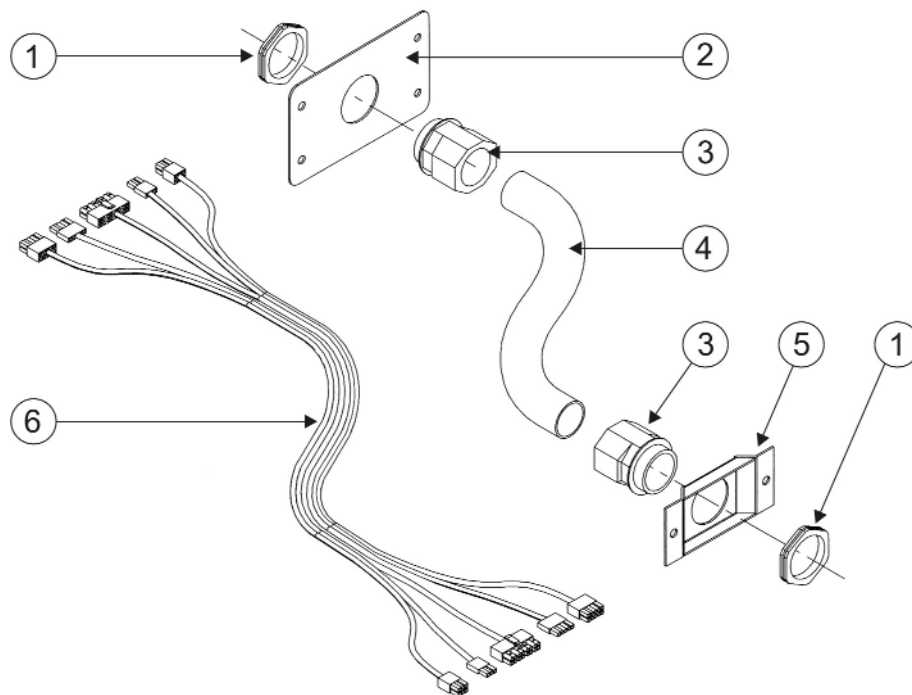
10.3 MONITOR CABINET – BILLBOARD ASSEMBLY

	CODE	DESCRIPTION
1	TRM-517	FLUORESCENT ASSEMBLY
2	TRM-121	SIDE COVER - LEFT
3	TRM-122	SIDE COVER - RIGHT
4	--	SCREW DIN7505 B4X10
5	--	SCREW UM1001 M6X30 BLACK



10.4 UNION HARNESS ASSEMBLY

	CODE	DESCRIPTION
1	TRM-441	NUT, conduit gland
2	TRM-230	FIXING PLATE - CABINET SIDE
3	TRM-442	CONDUIT GLAND - SEM STRAIGHT
4	TRM-443	PROTECTION TUBE, corrugated
5	TRM-840	FIXING PLATE - PLATFORM SIDE
6	-	UNION HARNESS (see note)

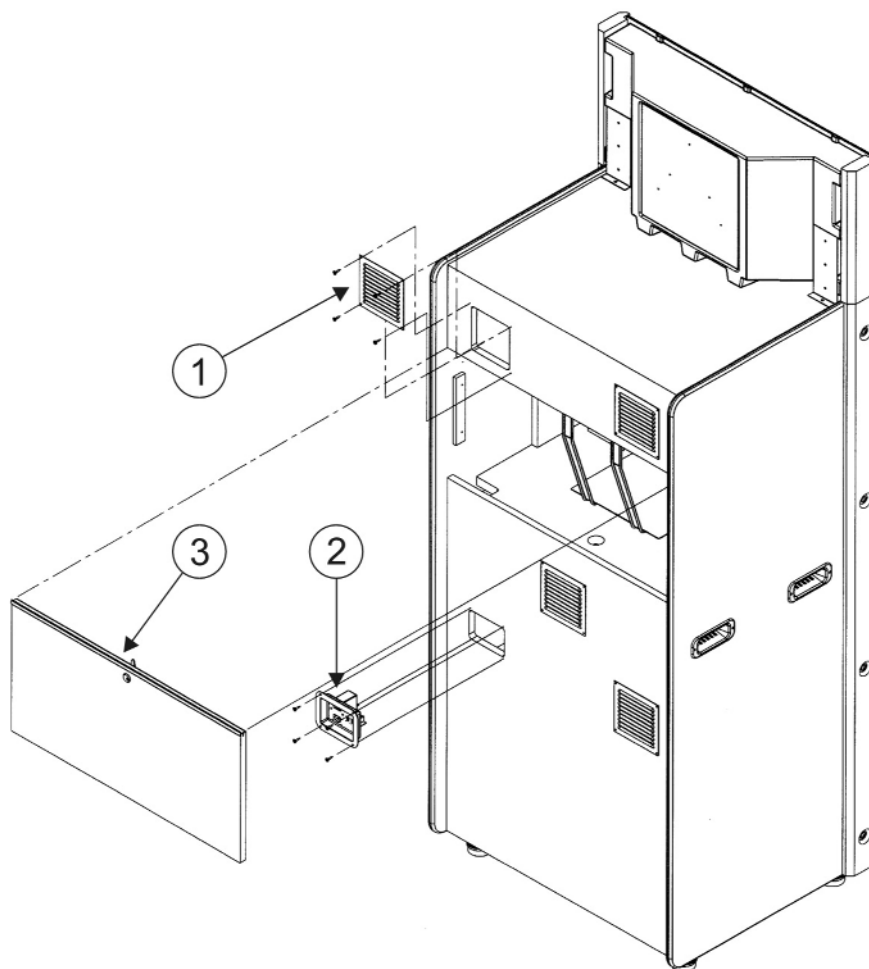


The union harness includes the following parts:

TRM-337 (SIGNALS HARNESS)
 TRM-338 (LEFT MOTOR HARNESS)
 TRM-339 (RIGHT MOTOR HARNESS)
 TRM-340 (GROUND HARNESS)

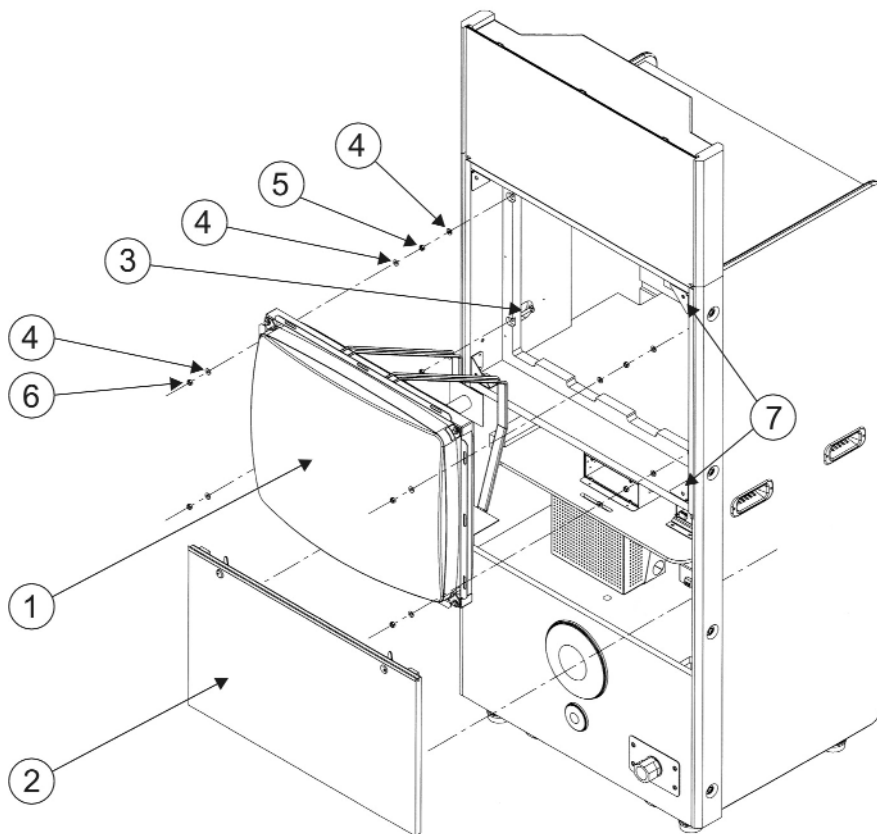
10.5 MONITOR CABINET – REAR ACCESORIES

	CODE	DESCRIPTION
1	TRM-367	VENTILATION GRILL 15X15
2	TRM-364	MAINS SWITCH & FUSE HOLDER (2X10A)
3	TRM-105	REAR DOOR - MONITOR



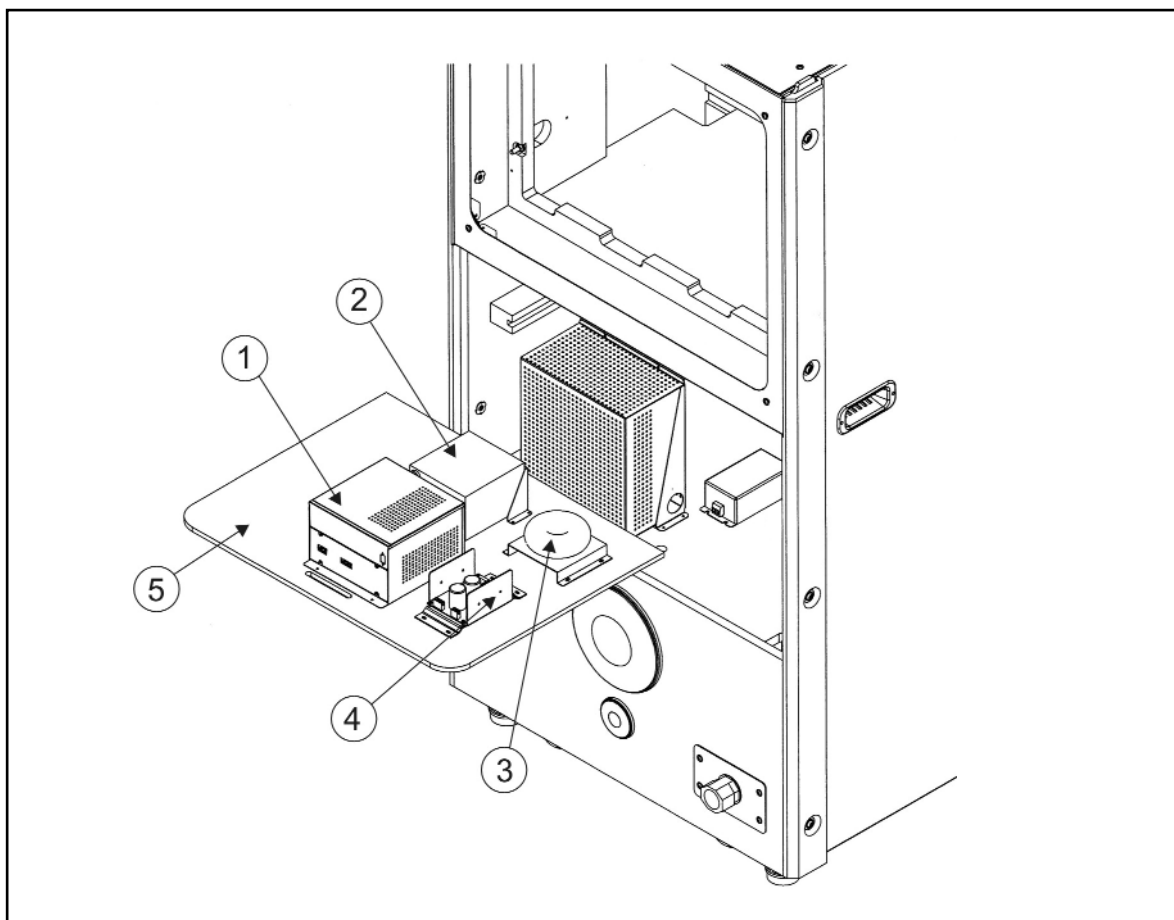
10.6 MONITOR CABINET – MONITOR ASSEMBLY AND FRONT DOOR

	CODE	DESCRIPTION
1	TRM-350	MONITOR Polo2 - 34", STAR PH - CODE 02197790
2	TRM-104	FRONT DOOR
3	--	SCREW DIN 603 M8X45
4	--	WASHER DIN125 M8
5	--	NUT DIN938 M8
6	--	NUT985 M8
7	TRM-234	BRACKET, monitor



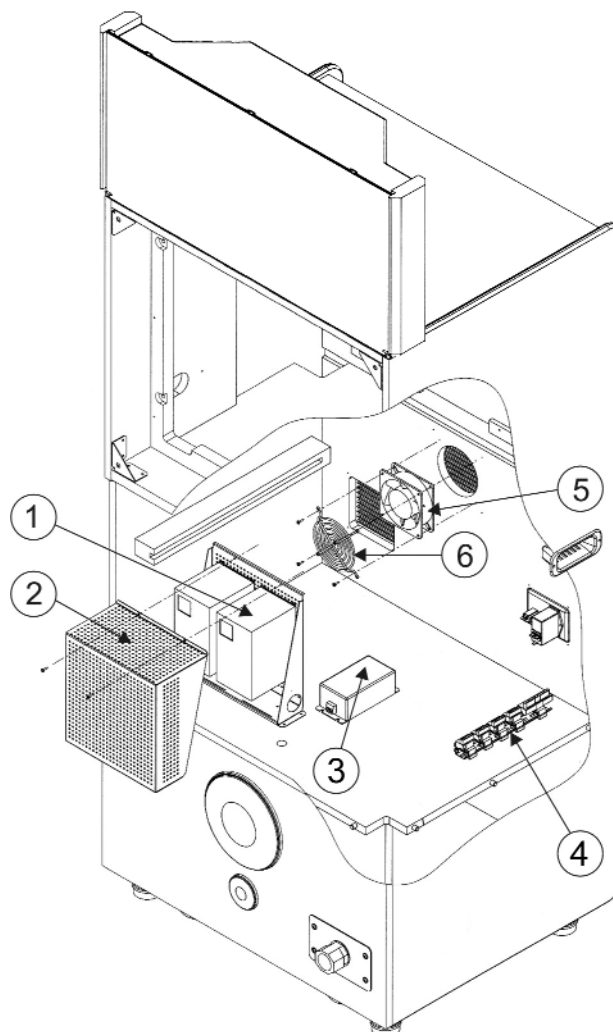
10.7 MONITOR CABINET – ELECTRONIC PARTS 1

	CODE	DESCRIPTION
1	TRM-357	CPU - TUNING RACE
2	TRM-355	PSU - PSATX10300
3	TRM-370	TOROIDAL TRANSFORMER 220/18-0-18 160VA - CROVISA 218316
4	TRM-358	POWER PCB - DC MOTOR DRIVER & SIGNAL ADAPTER
5	TRM-110	MOUNTING BASE (WOOD)



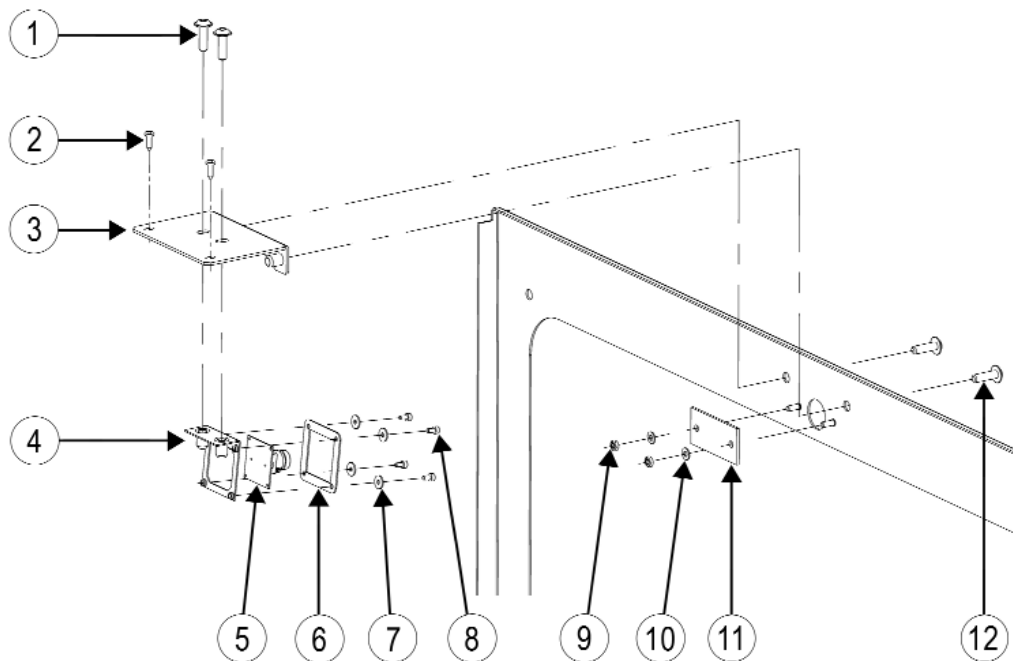
10.8 MONITOR CABINET – ELECTRONIC PARTS 2

	CODE	DESCRIPTION
1	TRM-392	FREQUENCY CONVERTER SE11200075
2	TRM-225	FARADAY BOX
3	TRM-391	MONOPHASIC FILTER
4	TRM-385	DERIVATION TERMINAL BLOCK
5	TRM-363	FAN 120X120X38
6	TRM-365	FAN GRILL (metallic)



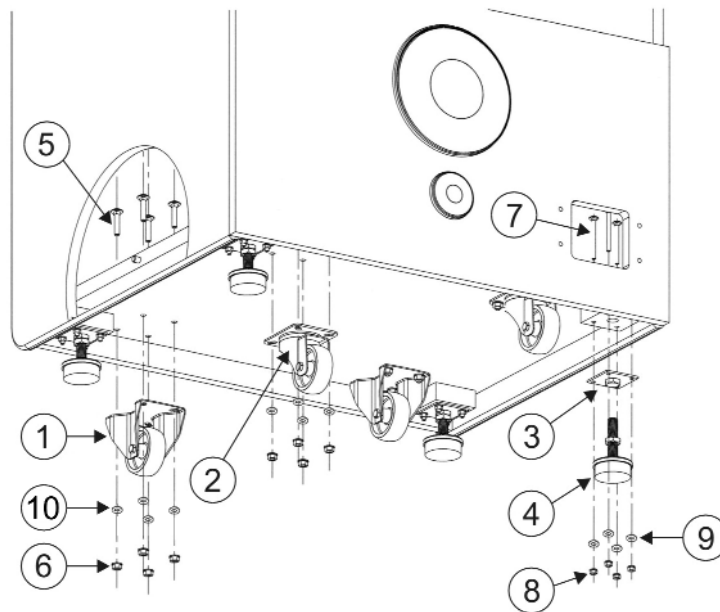
10.9 MONITOR CABINET – CAMERA ASSEMBLY

	CODE	DESCRIPTION
1	--	SCREW UM1001 M6X10, black
2	--	SCREW DIN7505B 4X13
3	TRM-239	MAIN BRACKET
4	TRM-238	CAMERA BRACKET
5	TRM-231	CAMERA HTC-253 SEC/SONY
6	TRM-233	FRAME, camera
7	TRM-322	WASHER, bakelite
8	--	SCREW DIN912 M3X6
9	--	NUT DIN934 M3
10	--	WASHER DIN9021 M3
11	TRM-	COVER; metacrylate
12	--	SCREW UM1001 M6X20



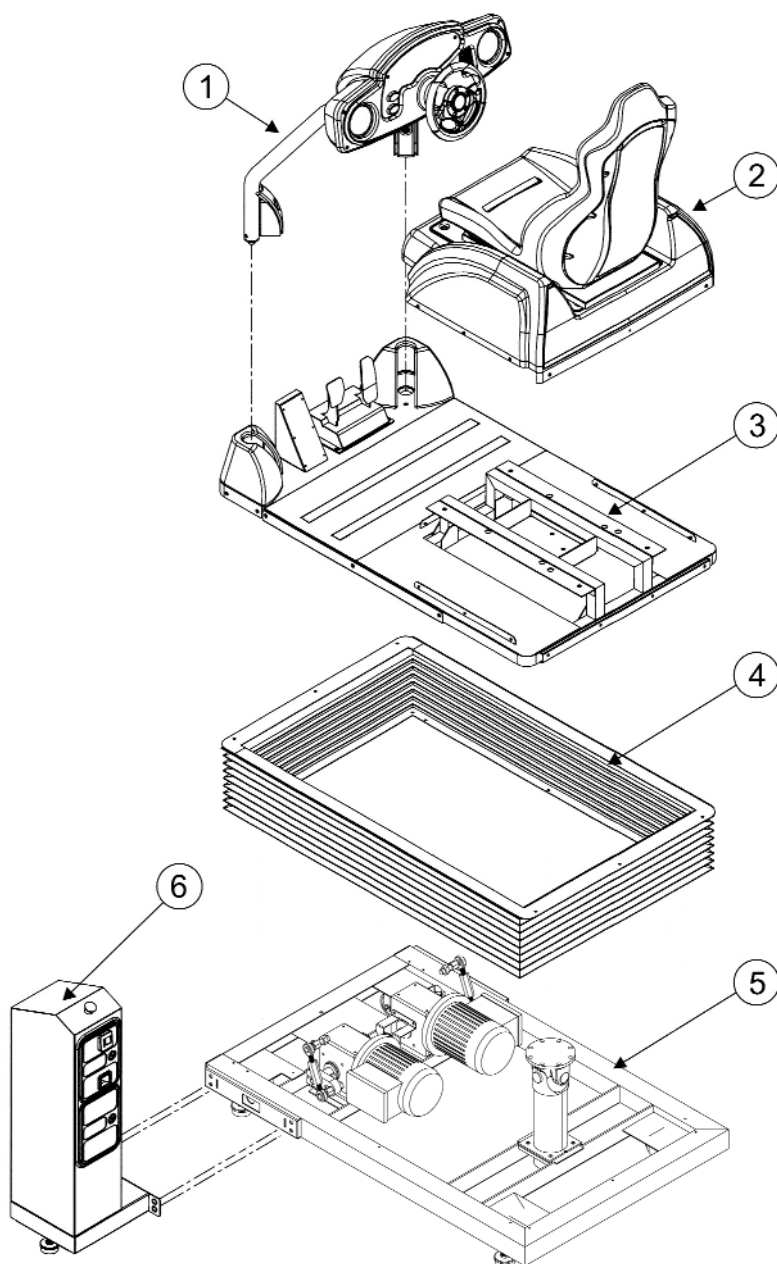
10.10 MONITOR CABINET – BOTTOM PARTS

	CODE	DESCRIPTION
1	TRM-432	CASTOR Ø80
2	TRM-433	SWIVELING CASTOR Ø80
3	TRM-235	BRACKET, leg leveller
4	TRM-372	LEG LEVELLER
5	--	SCREW DIN603 M8X45, castor
6	--	NUT DIN985 M8
7	--	SCREW DIN603 M6X70, leg leveller
8	--	NUT DIN985 M6, leg leveller
9	--	SPRING WASHER DIN127 M6
10	--	SPRING WASHER DIN127 M8



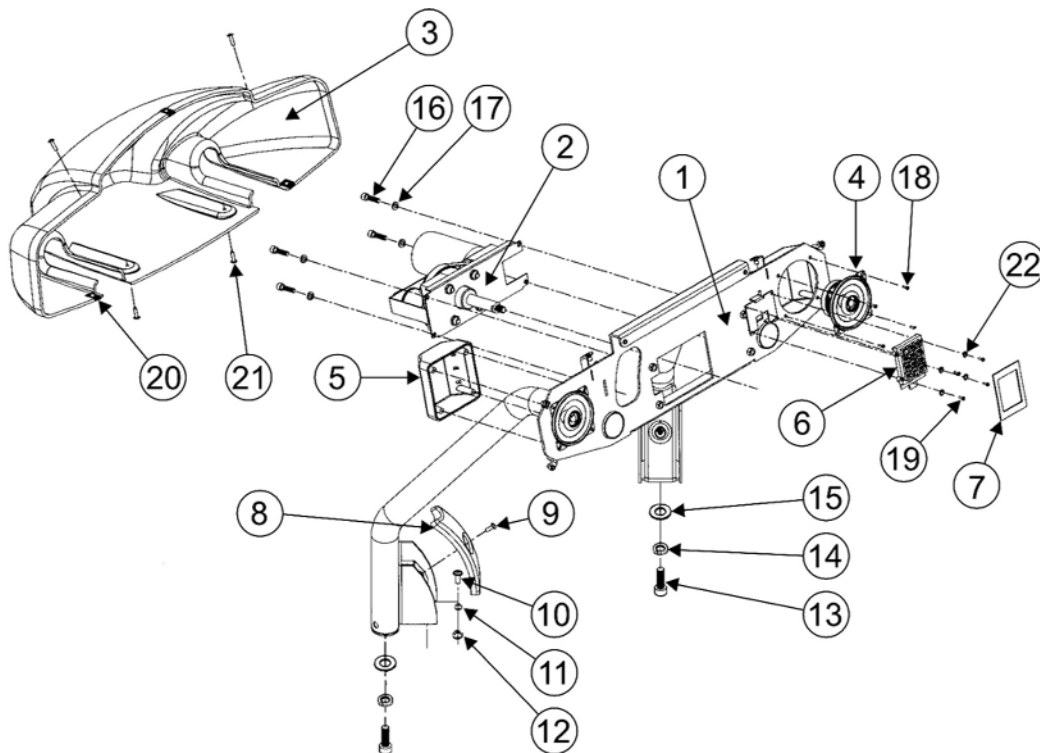
10.11 PLATFORM – MAIN ASSEMBLIES

	CODE	DESCRIPTION
1	--	DASHBOARD ASSEMBLY
2	--	SEAT ASSEMBLY
3	--	MOBILE PLATFORM ASSEMBLY
4	--	PROTECTION FOLDING HOOD
5	--	BASE ASSEMBLY
6	--	COIN TOWER ASSEMBLY



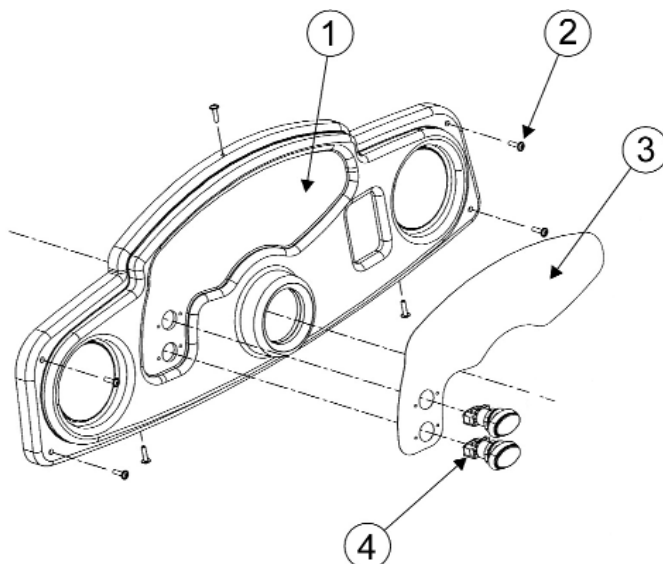
10.12 DASHBOARD ASSEMBLY - 1

	CODE	DESCRIPTION
1	TRM-833	TUBULAR STRUCTURE
2	TRM-852	STEERING MECHANISM
3	TRM-806	BACK COVER, BLACK
4	TRM-360	4" LOUDSPEAKER, 4 Ω / 60W - 2 WAY, code 35.1367
5	TRM-865	LOUDSPEAKER COVER, code 11.0349
6	TRM-881	KEYPAD AK707
7	TRM-882	FRAME, keypad
8	TRM-808	SAFETY COVER, tubes
9	--	SCREW UM1001 M6X10
10	--	SCREW DIN912 M8X20
11	--	SPRING WASHER DIN127 M8
12	--	FLAT WASHER DIN125 M8
13	--	SCREW DIN912 M14X40
14	--	SPRING WASHER DIN127 M14
15	--	FLAT WASHER DIN125 M14
16	--	SCREW DIN912 M8X20
17	--	WASHER DIN6798 M8
18	--	SCREW DIN7981 3,9X20
19	--	SCREW DIN7985 M3X12
20	--	SPECIAL NUT - TRT-M5-1
21	--	SCREW UM1001 M5X10, BLACK
22	--	WASHER DIN6798 M3

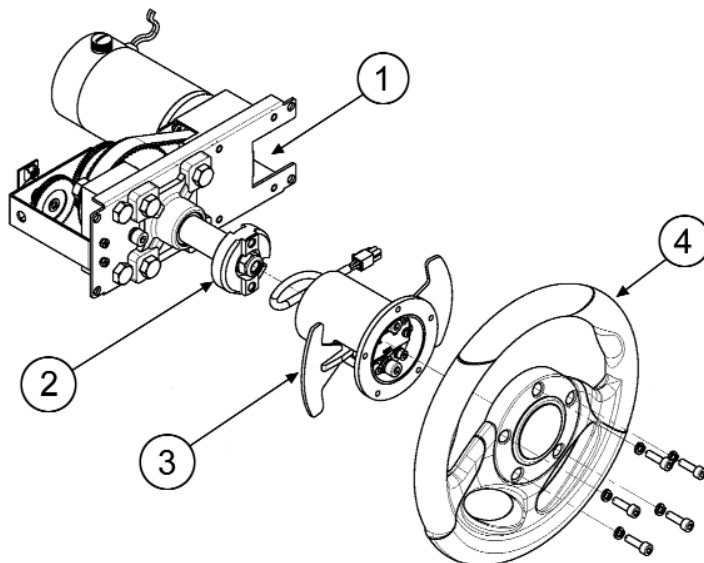


10.13 DASHBOARD ASSEMBLY - 2

	CODE	DESCRIPTION
1	TRM-805	FRONT COVER
2	TRM-804	DECAL, instructions
3	--	SCREW UM1001 M5X15
4	TRM-880	PUSH BUTTON AO113, RED

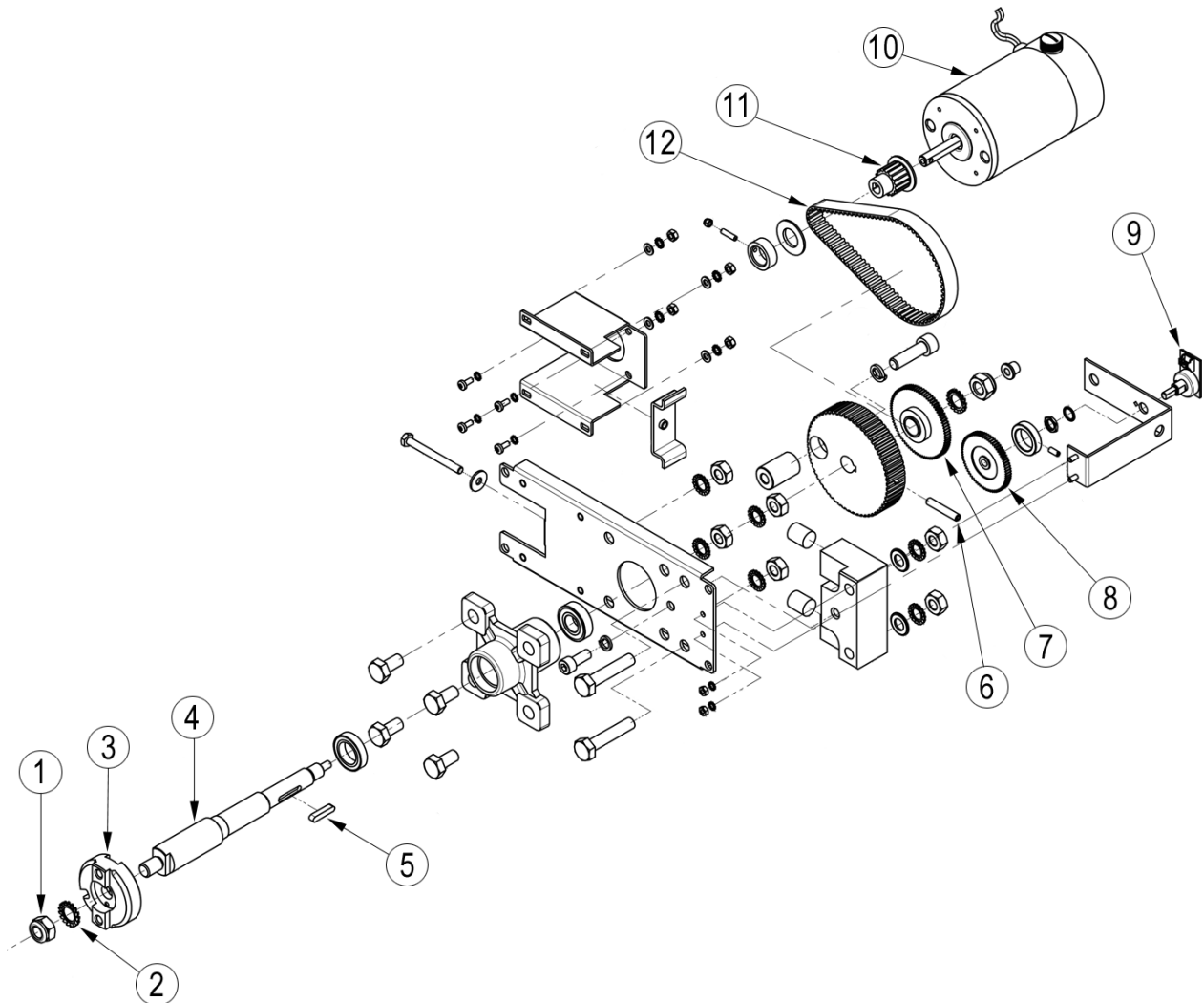
**10.14 STEERING ASSEMBLY**

	CODE	DESCRIPTION
1	TRM-852	STEERING MECHANISM
2	S-GA-SP020401	COUPLER
3	TRM-888	SHIFT GEAR
4	TRM-851	STEERING WHEEL



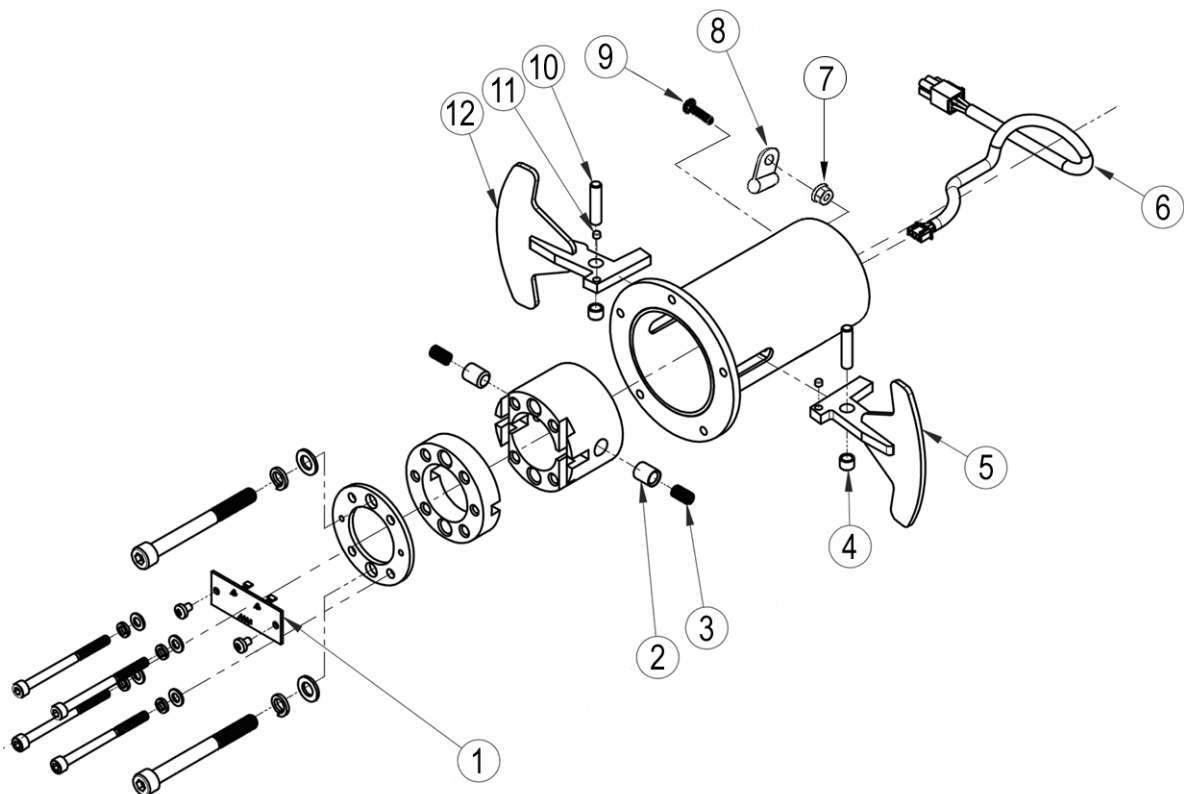
10.15 STEERING MECHANISM

	CODE	DESCRIPTION
1	C-22-020212	LOCKNUT DIN985 M12
2	C-22-030812	WASHER DIN6798A M12
3	S-GA-SP020401	COUPLING DISC
4	C-GA-TX01010	SHAFT
5	C-22-80025525	WOODRUF KEY, shaft
6	C-22-0501635	SET SCREW M6X35
7	C-40-022087	PLASTIC PINION, shaft
8	C-40-023097	PLASTIC PINION, potentiometer
9	TRM-305	POTENTIOMETER 5K Ω , with PCB
10	C-29-401582	MOTOR 20VDC, 3.9A MODEL 1582
11	C-40-025048	PLASTIC PULLEY, motor
12	C-40-085027	BELT 15mm 400/5



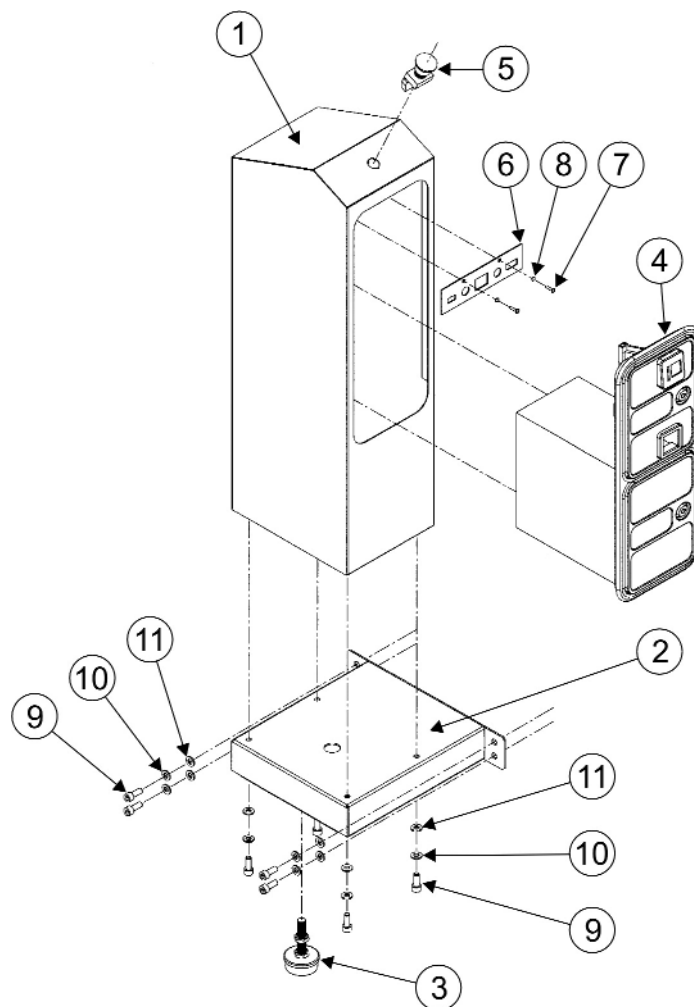
10.16 GEAR SHIFTER

	CODE	DESCRIPTION
1	C-29-40SP20	PCB
2	C-GA-SP03030	BOLT, nylon
3	C-11-SP0710	SPRING
4	C-GA-TK1000	BUSH
5	P-40-013506S11	RIGHT LEVER
6	C-29-40SP10	HARNESS
7	--	WASHER DIN 6923, M5
8	--	PLASTIC CLAMP N-4
9	--	SCREW ISO 7380, M5X10
10	C-GA-SP03050	SHAFT, lever
11	C-60-040234	MAGNET, neodymium
12	P-40-013506S01	LEFT LEVER



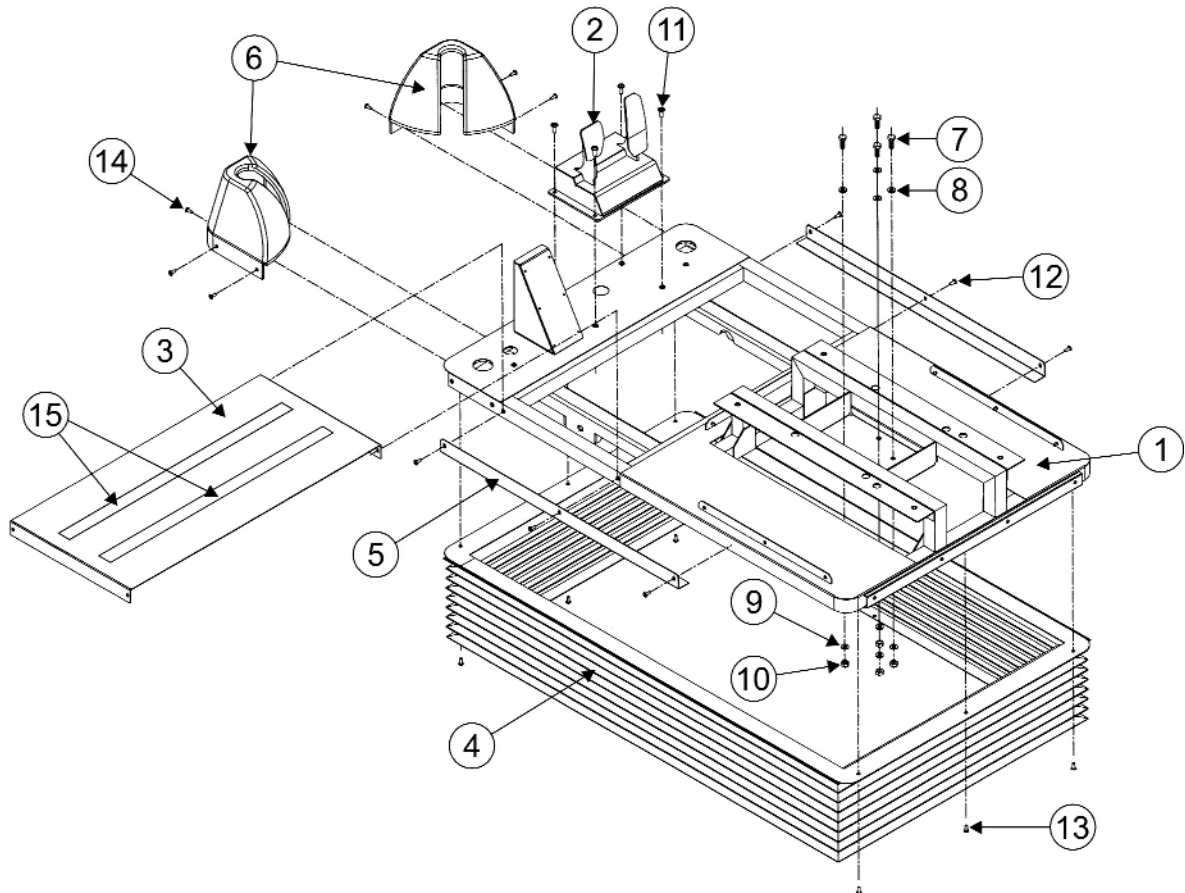
10.17 COIN TOWER ASSEMBLY

	CODE	DESCRIPTION
1	TRM-834	TOWER
2	TRM-835	TOWER BASE
3	TRM-861	LEG LEVELLER rubber base Ø60, M16
4	TRM-410	DOUBLE FRAME MINIDOOR 1E
5	TRM-817	EMERGENCY STOP BUTTON
6	TRM-299	TEST PANEL
7	--	SCREW ISO7380 M4X8 BLACK
8	--	WASHER DIN6798 M4
9	--	SCREW DIN912 M10X20
10	--	SPRING WASHER DIN127 M10
11	--	FLAT WASHER DIN125M10



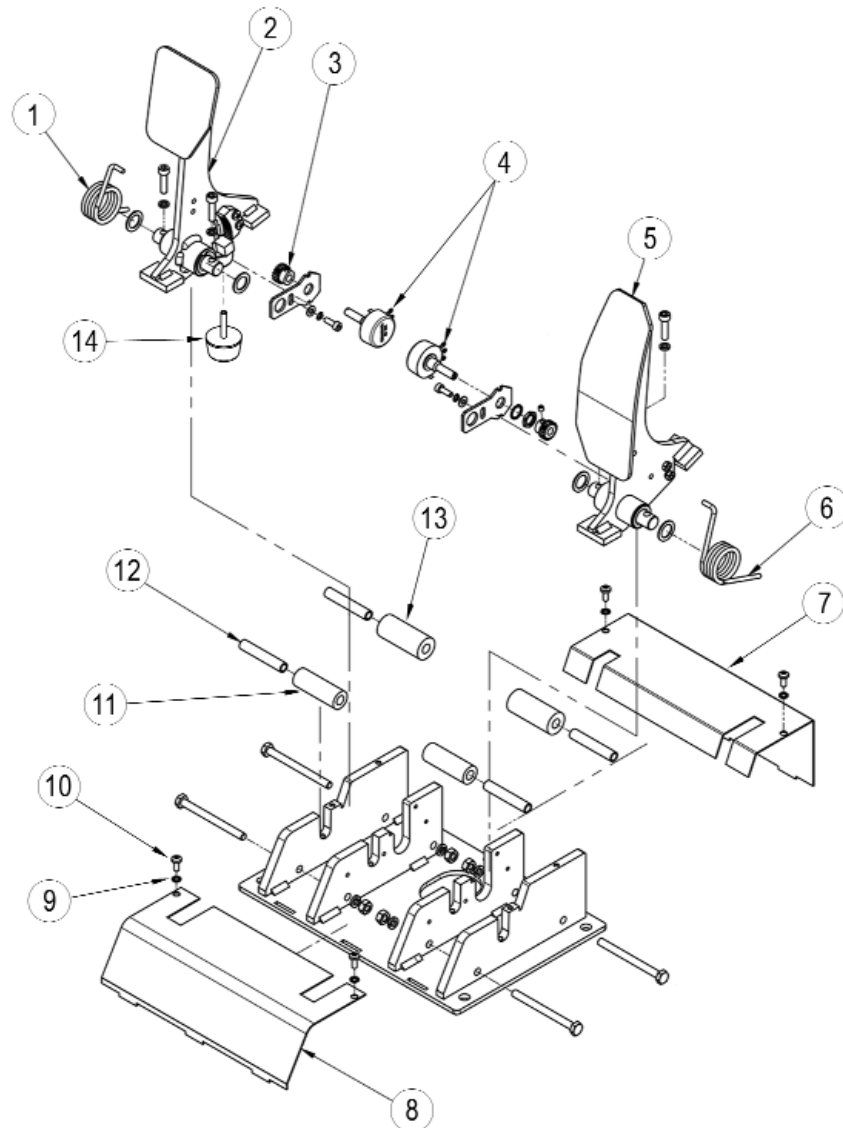
10.18 MOBILE PLATFORM ASSEMBLY

	CODE	DESCRIPTION
1	TRM-832	PLATFORM
2	TRM-860	PEDALS ASSEMBLY
3	TRM-836	METALIC COVER, access to motors
4	TRM-810	PROTECTION FOLDING HOOD
5	TRM-846	BRACKET, protection folding hood
6	TRM-807	PLASTIC COVER, tubes
7	--	SCREW DIN912 M12X30
8	--	FLAT WASHER DIN125 M12
9	--	FLAT WASHER DIN125 M12
10	--	NUT DIN985 M12
11	--	SCREW UM1001 M8X20 BLACK
12	--	SCREW UM1001 M6X16
13	--	SCREW UM1001 M6X16
14	--	SCREW UM1001 M6X10
15	TRM-869	SAFETY WALK BAND - 50mm width



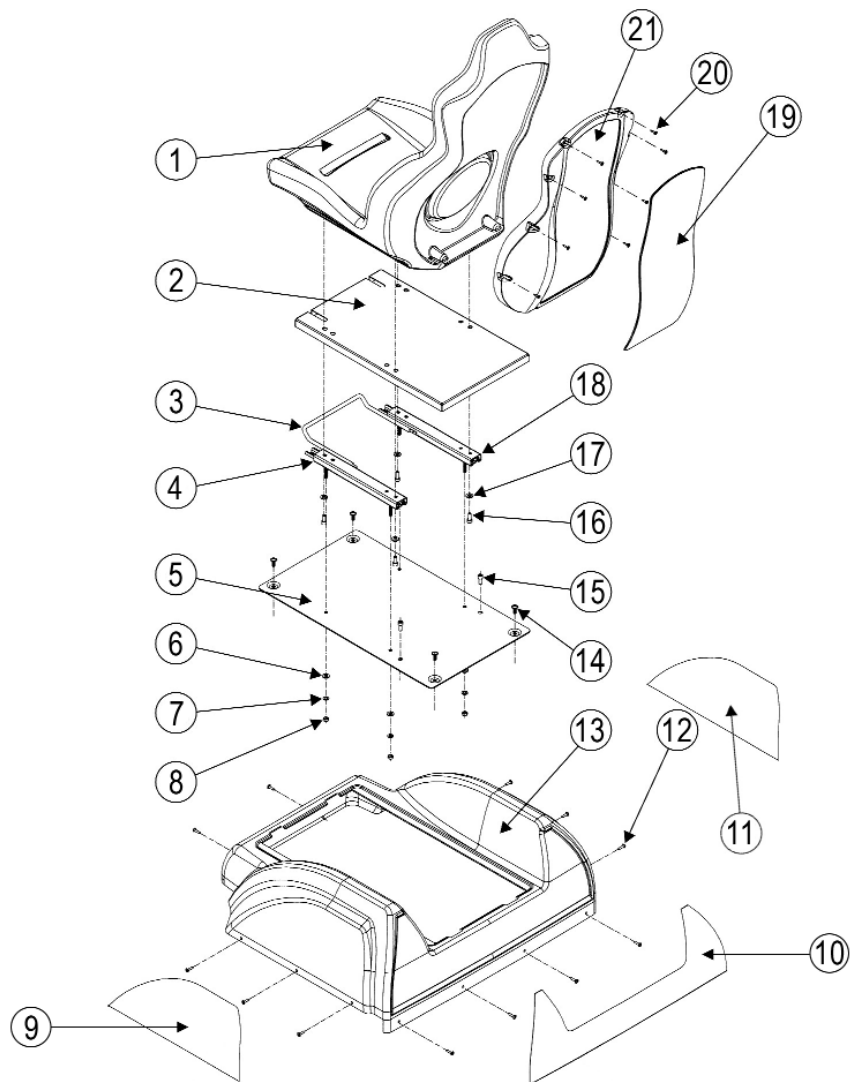
10.19 PEDALS ASSEMBLY

	CODE	DESCRIPTION
1	C-11-416020	SPRING, brake pedal
2	S410260010000	BRAKE PEDAL
3	C-40-401510	PINION, CuZn37, potentiometer
4	C-29-405619	POTENTIOMETER, shaft Ø6X19, KU5021S36HL5K
5	S410260020000	ACCELERATOR PEDAL
6	C-11-416010	SPRING, accelerator pedal
7	C-41-601200	REAR COVER AP-02
8	C-41-601100	FRONT COVER AP-02
9	C-22-03084	WASHER DIN6798 M4
10	C-22-0105410	SCREW DIN7985 M4X10
11	C-41-040207	TUBE, PVC
12	C-41-040200	SPACER SLEEVE
13	C-41-040306	TUBE, ADIPRENE
14	C-41-605100	RUBBER STOPPER, brake pedal



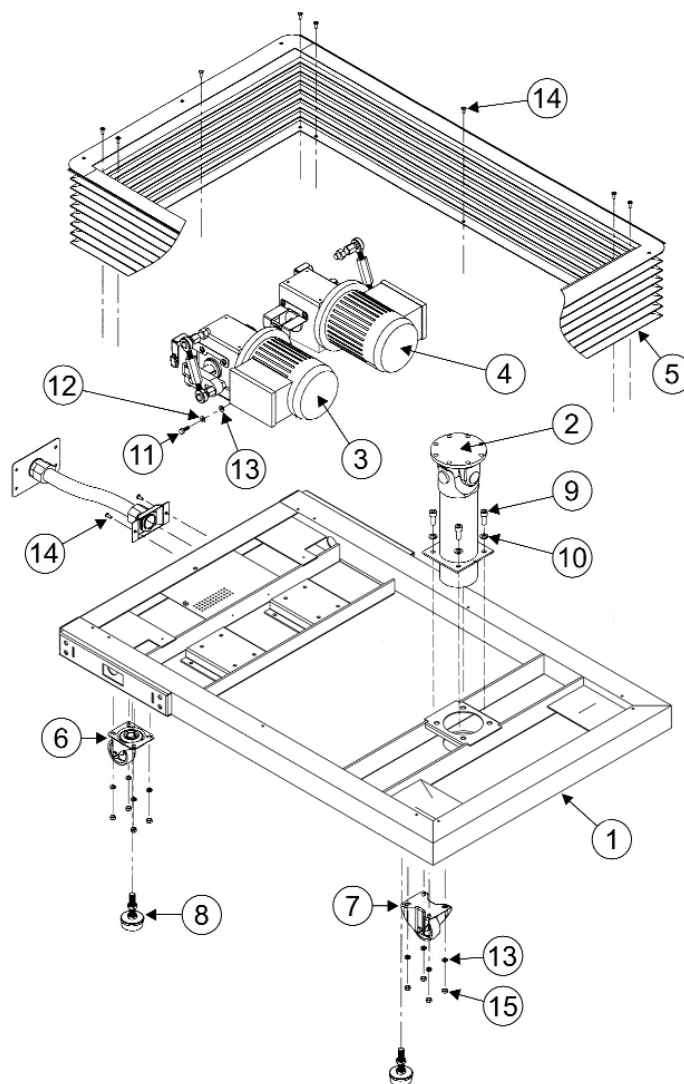
10.20 SEAT ASSEMBLY

	CODE	DESCRIPTION
1	TRM-801	SEAT
2	TRM-837	PROTECTION PLATE
3	TRM-885	HANDLE, seat guides
4	TRM-887	SEAT SLIDE - LEFT
5	TRM-838	SUPPORTING PLATE, seat
9	TRM-811	LEFT DECAL, plastic cover
10	TRM-814	REAR DECAL, plastic cover
11	TRM-812	RIGHT DECAL, plastic cover
13	TRM-803	PLASTIC COVER, seat base
18	TRM-886	SEAT SLIDE - RIGHT
19	TRM-813	DECAL, back cover
21	TRM-802	BACK COVER, seat



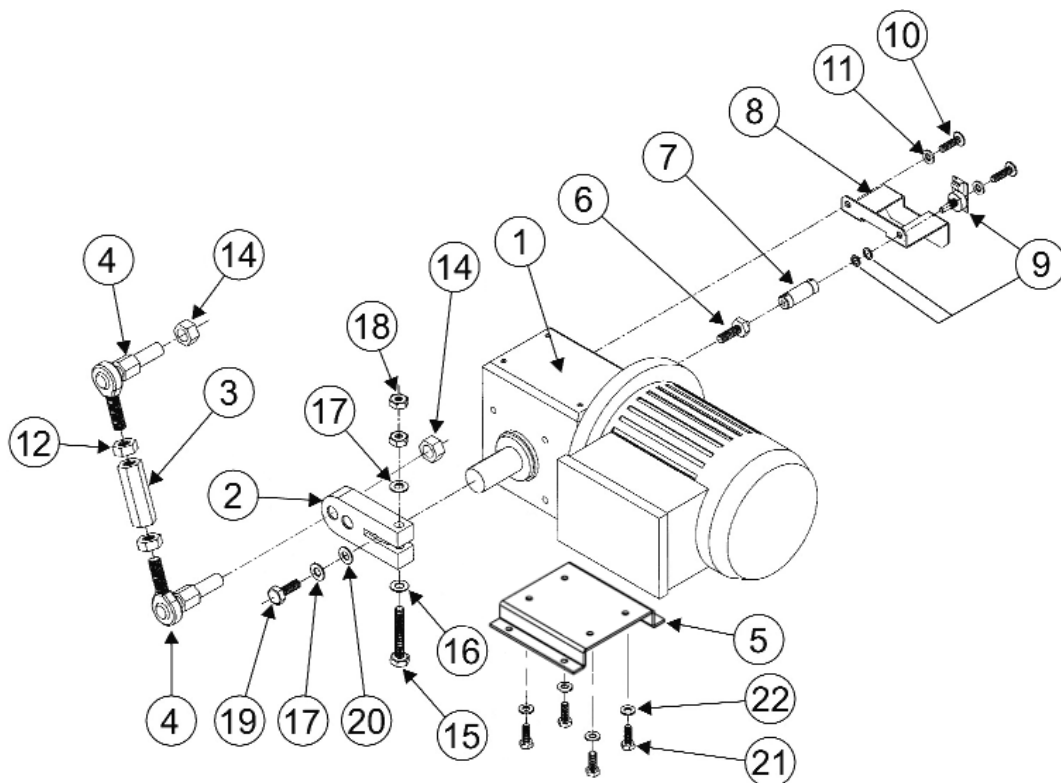
10.21 BASE ASSEMBLY

	CODE	DESCRIPTION
1	TRM-831	BASE
2	TRM-839S	CARDAN ASSEMBLY
3	TRM-821	MOTOR ASSEMBLY - LEFT
4	TRM-820	MOTOR ASSEMBLY - RIGHT
5	TRM-810	PROTECTION FOLDING HOOD
6	TRM-863	SWIVELING CASTOR Ø80
7	TRM-862	CASTOR Ø80
8	TRM-861	LEG LEVELLER, rubber base Ø60, M16
9	--	SCREW DIN912 M12X30
10	--	SPRING WASHER DIN127 M12
11	--	SCREW DIN933 M8X20
12	--	SPRING WASHER DIN127 M8
13	--	FLAT WASHER DIN125 M8
14	--	SCREW UM1001 M6X16
15	--	NUT DIN985 M8



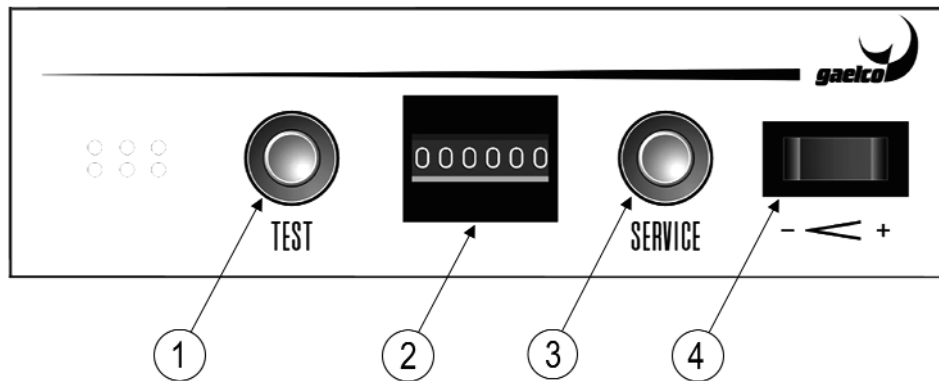
10.22 MOTOR ASSEMBLY

	CODE	DESCRIPTION
1	--	GEARED MOTOR - LEFT: TRM-821 / RIGHT: TRM-820
2	TRM-827	SHAFT CRANK, motor trasmission
3	TRM-826	HEXAGONAL ROD, motor transmission
4	TRM-825	SWIVEL JOINT, male M14 + male M16, SBA-0418
5	TRM-841N	SUPPORTING PLATE, motor
6	TRM-829	CENTERING SCREW, elastic coupling
7	TRM-819	ELASTIC COUPLING - RIGHT: TRM-819R / LEFT: TRM-819L
8	TRM-848	BRACKET, potentiometer
9	TRM-855	POTENTIOMETER - GAELCO
10	--	SCREW DIN912 M8X12
11	--	SPRING WASHER DIN127 M8
12	--	NUT DIN934 M14
14	--	LOCKNUT DIN985 M16
15	--	SCREW DIN933 M10X70
16	--	FLAT WASHER DIN125 M10
17	--	SPRING WASHER DIN127 M10
18	--	NUT DIN934 M10
19	--	SCREW DIN933 M10X30
20	--	WASHER DIN9021 M10
21	--	SCREW DIN933 M8X20
22	--	WASHER DIN6798 A 8,2

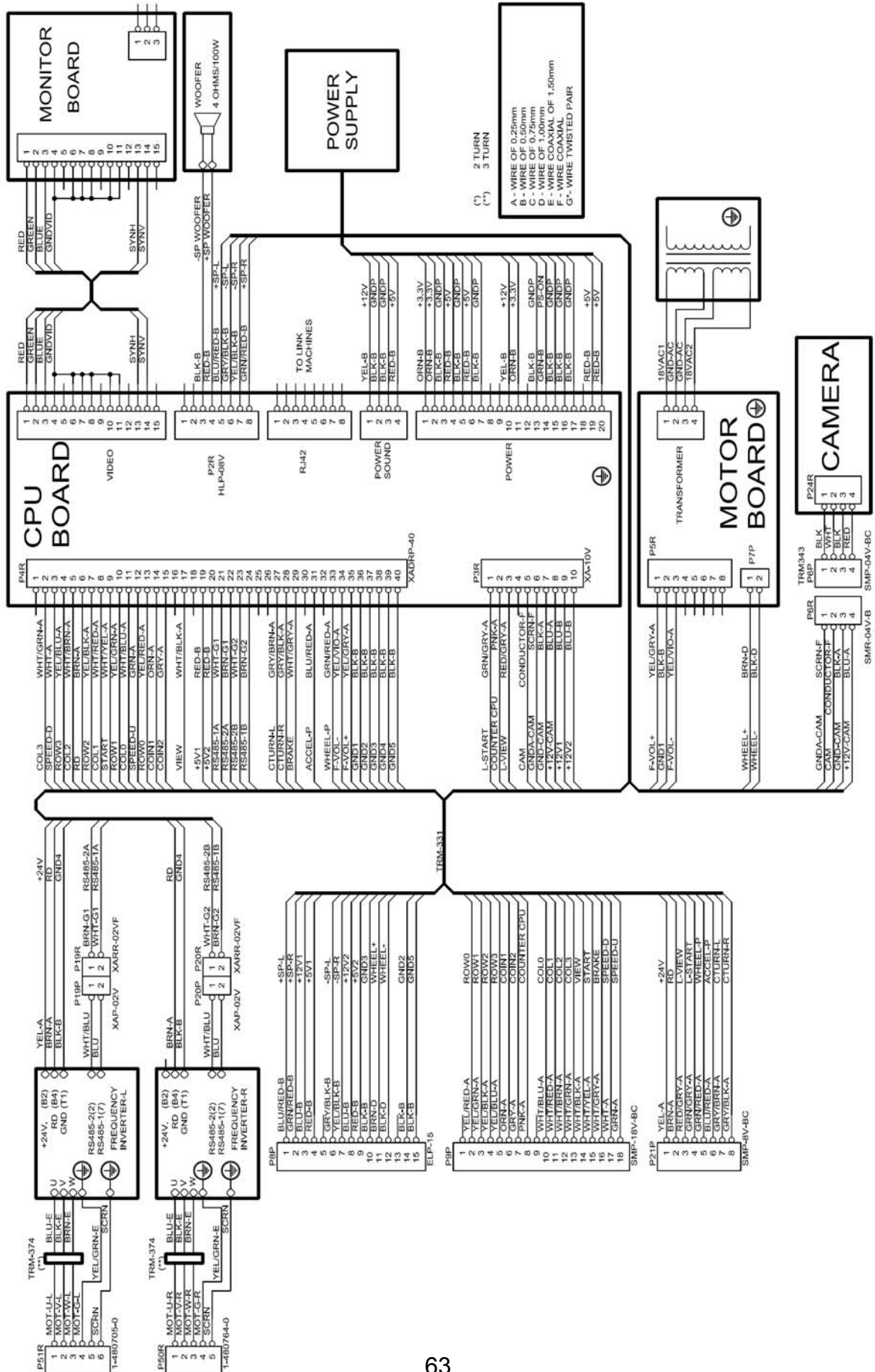


10.23 MISCELANEOUS - CONTROL PANEL

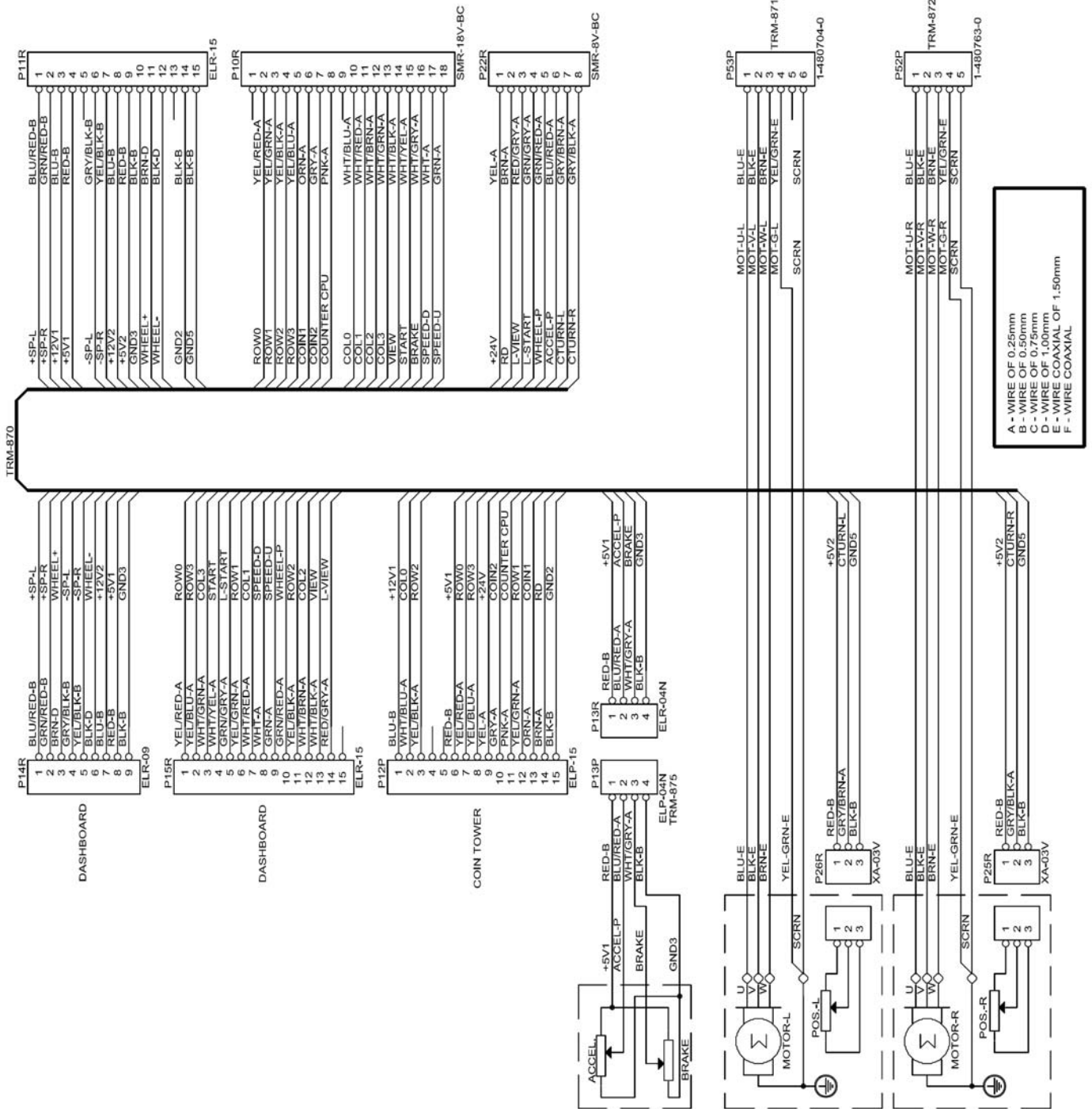
	CODE	DESCRIPTION
1	TRM-396	TEST BUTTON - P11.525
2	TRM-399	COUNTER (6V)
3	TRM-396	SERVICE BUTTON - P11.525
4	TRM-395	VOLUME SWITCH



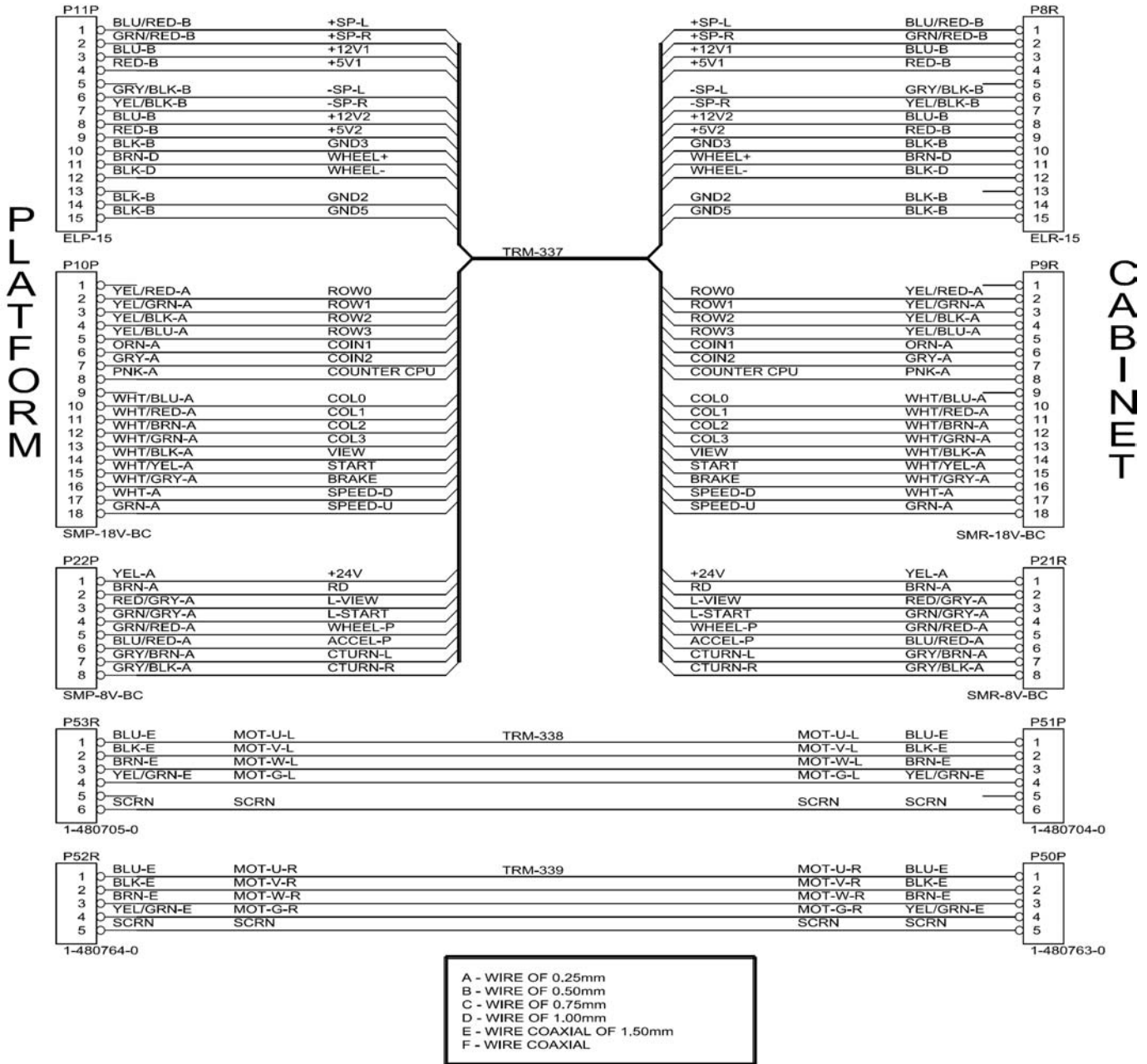
11. WIRING DIAGRAMS 11.1 CABINET WIRING



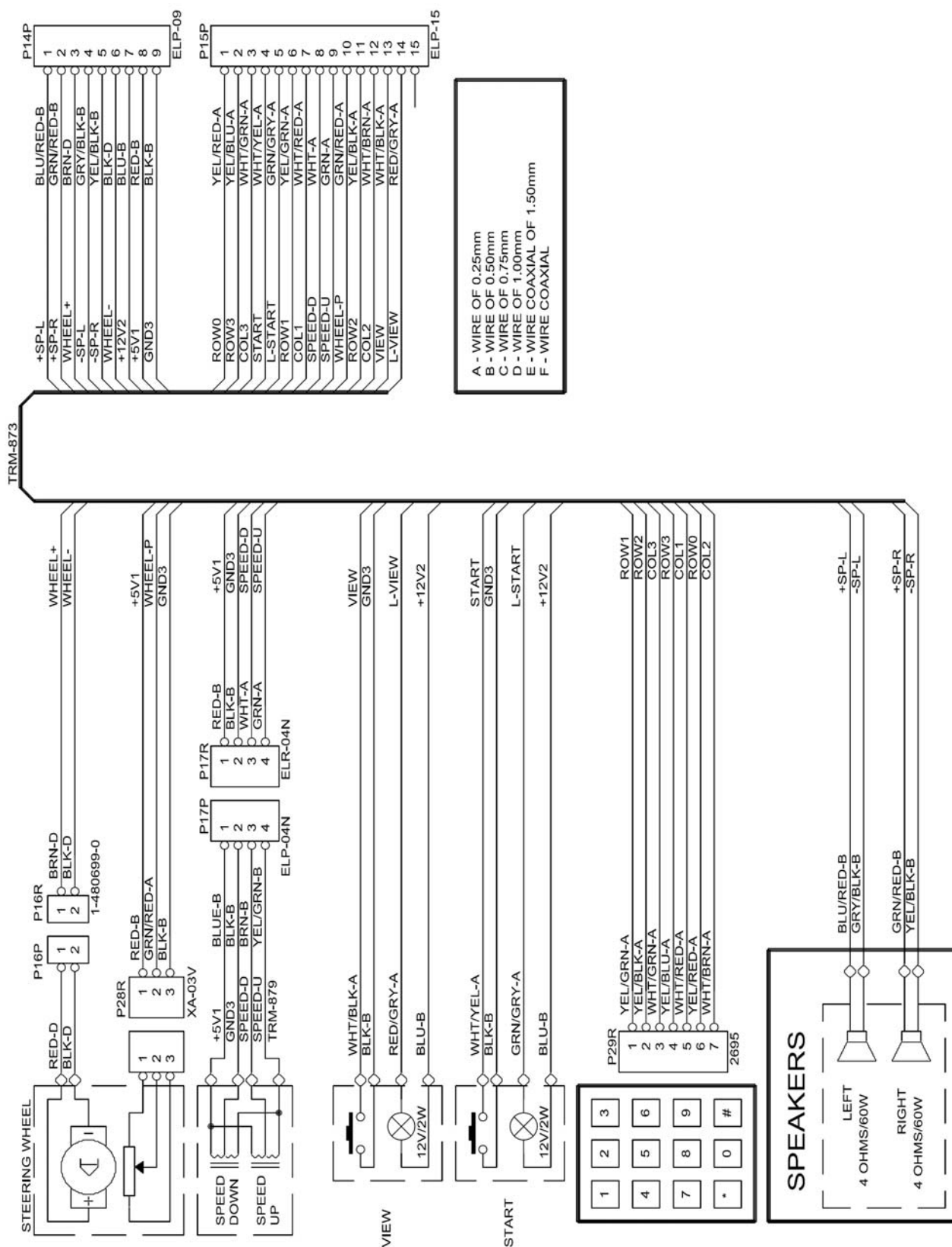
11.2 PLATFORM WIRING



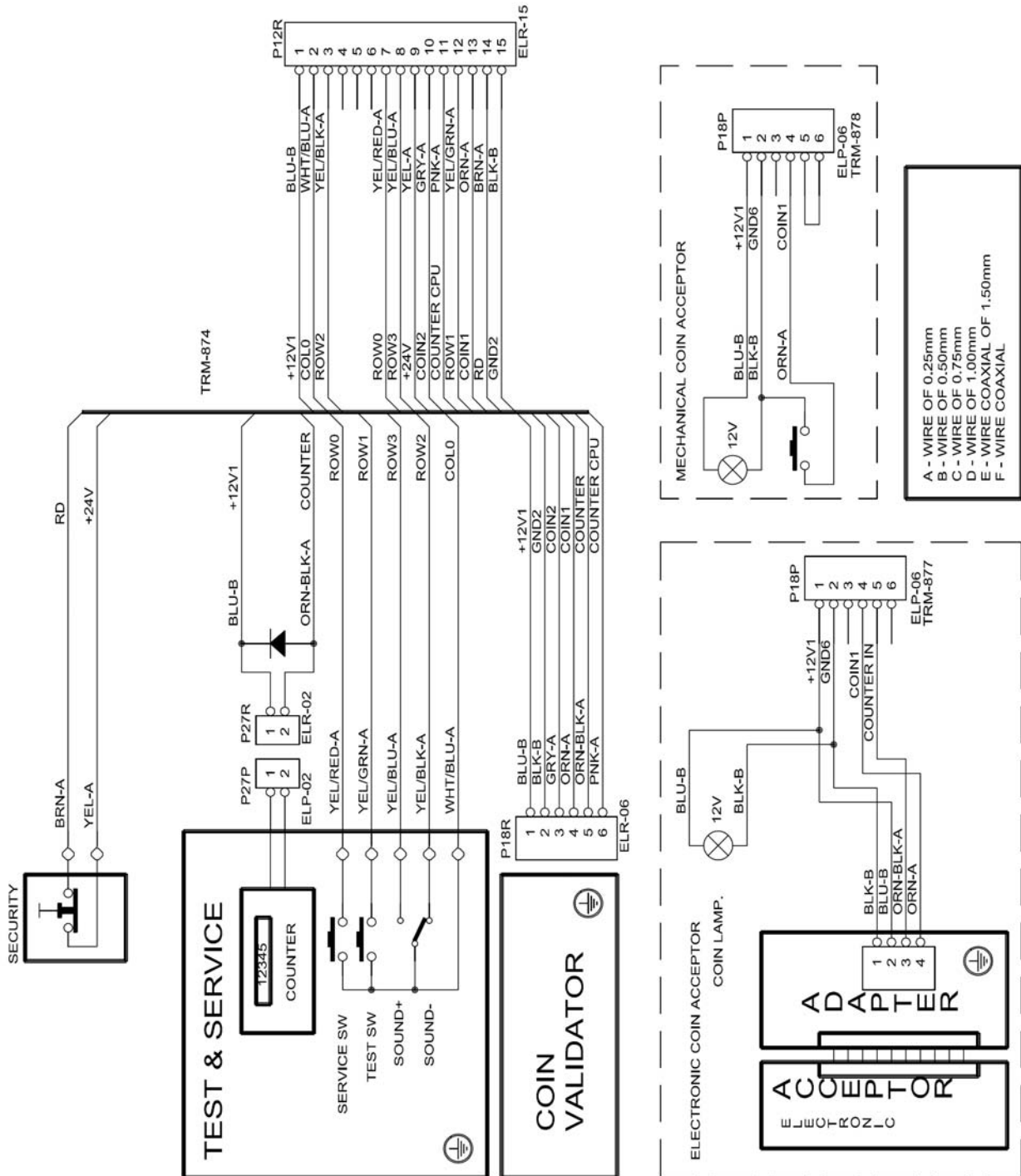
11.3 UNION HARNESS



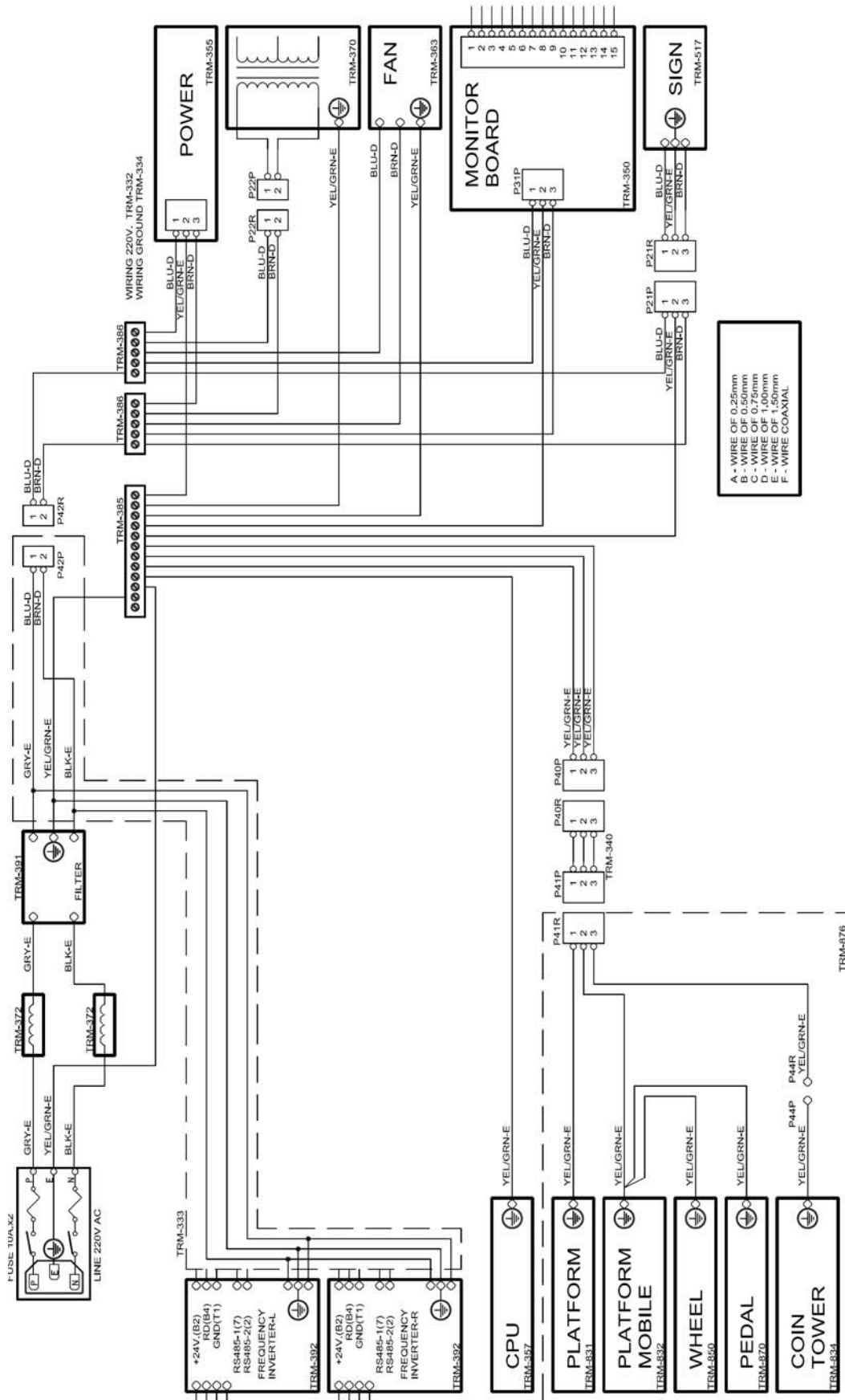
11.4 DASHBOARD WIRING



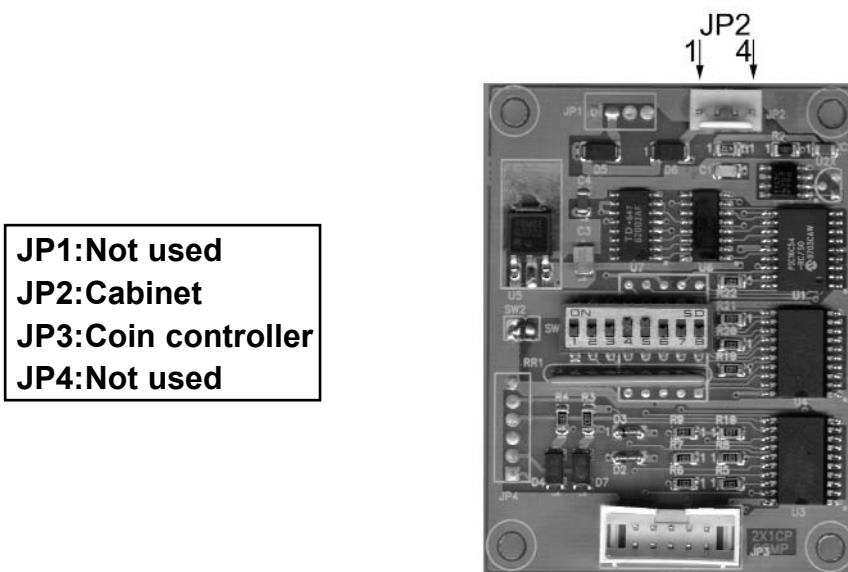
11.5 COIN TOWER WIRING



11.6 POWER WIRING



12. CREDIT DISTRIBUTOR SETUP



JP1:Not used
JP2:Cabinet
JP3:Coin controller
JP4:Not used

JP3

Connector JP2: This connector should be connected to ATV PCB wiring

JP2	Description	Values	Source/Destination
Pin 1	Input GND	GND	GND power supply
Pin 2	Input VDC	+12 VDC	DC power supply
Pin 3	Counter output	0/+5/+12 VDC	Coin counter
Pin4	Credits output	+5/0 VDC	Credits for CPU

Connector JP3: Input connector of electronic coin controller. Setup per channel.

PIN	Signal	Active
1	0V	0V
2	+12VDC	+12VDC
3	Output 5	0V
4	Output 6	0V
5	- - -	
6	Lock	High
7	Output 1	0V
8	Output 2	0V
9	Output 3	0V
10	Output 4	0V

9	7	5	3	1
10	8	6	4	2

(As seen from components side)

PROGRAMMING OF COIN CONTROLLERS

Controllers supported: COIN CONTROL C-120
NRI G-13.6000
MARS CASHFLOW 330

MARS 330/S 212	OPA	OPB	OPC	OPD	OPE	OPF
NRI G-13.6000	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6
Coin Control C 120	Coin 1	Coin 2	Coin 3	Coin 4	Coin 5	Coin 6
PIN Controller:	7	8	9	10	3	4
USA	= =	= =	= =	1 \$	50 Ct	25 Ct
Great Britain	= =	1 £	50 Pen	= =	20 Pen	10 Pen
Australia	= =	= =	5 \$	= =	2 \$	1 \$
Switzerland	= =	= =	5 Fr	= =	2 FS	1 FS
Sweden	= =	10 Kr	5 Kr	= =	= =	1 Kr
Norway	20 Kr	10 Kr	5 Kr	= =	= =	1 Kr
EURO €	2€	1€	50c	= =	20c	10c

SWITCH SETUP FOR EUROS

SW1: Always OFF

SW2: Always OFF

SW3: Not used

SW4-SW5: Extra Credits (Bonuses)

Combinations of this two dip switches are used to program bonuses (free games) according to the scale shown in the table. The table varies according to the game price selected.

SW6-SW7-SW8: Game Price

These dip switches are used to choose the game price. The bonus table shows the combination of game prices with the payments that allow the player to obtain extra games (bonuses).

CREDITS table				BONUS table (SW4/SW5)			
SW6	SW7	SW8	Value/Credit	OFF/OFF	ON/OFF	OFF/ON	ON/ON
OFF	OFF	OFF	10c	No bonus	50c	40c	20c
ON	OFF	OFF	20c	No bonus	50c	40c	20c
OFF	ON	OFF	30c	No bonus	*50c	30c	60c
ON	ON	OFF	40c	No bonus	2€	1,6€	80c
OFF	OFF	ON	50c	No bonus	2,5€	2€	1€
ON	OFF	ON	80c	No bonus	2€	1,6€	80c
OFF	ON	ON	1€	No bonus	2,5€	2€	1€
ON	ON	ON	1,2€	No bonus	2€	1,6€	2,4€

(*) Add another credit for the second lap.

APPLICATION EXAMPLES

Game price: 50c, NO BONUS

Switch set up:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON

Game price: 50c, BONUS FOR 2€ (4 credits + 1 credit free)

Switch setup:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
OFF	OFF	OFF	OFF	ON	OFF	OFF	ON

Game price: 1€ , NO BONUS

Switch setup:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
OFF	OFF	OFF	OFF	OFF	OFF	ON	ON

Game price: 1€ , BONUS FOR 2,5€ (2 credits + 1 credit free)

Switch setup:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
OFF	OFF	OFF	ON	OFF	OFF	OFF	ON

SWITCH SETUP FOR OTHERS CURRENCIES

SW1: Always OFF**SW2:** Coin multiplication factor

SW2=OFF Euro π , and rest of Europe	Chanel:	1	2	3	4	5	6
	Value:	X20	X10	X5	X4	X2	X1
SW2=ON (USA)	Chanel:	1	2	3	4	5	6
	Value:	X20	X10	X8	X4	X2	X1

SW3: Not used**SW4-SW5: Extra Credits (Bonuses)**

Combinations of these two dip switches are used to program bonuses (free games) according to the scale shown in the table. The table varies according to the game price selected.

SW6-SW7-SW8: Game Price

These dip switches are used to choose the game price. The bonus table shows the combination of game prices with the payments that allow the player to obtain extra games (bonuses).

CREDITS table				BONUS table (SW4/SW5)			
SW6	SW7	SW8	Value/Credit	OFF/OFF	ON/OFF	OFF/ON	ON/ON
OFF	OFF	OFF	1	0	5	4	2
ON	OFF	OFF	2	0	5	4	2
OFF	ON	OFF	3	0	*5	3	6
ON	ON	OFF	4	0	20	16	8
OFF	OFF	ON	5	0	25	20	10
ON	OFF	ON	8	0	20	16	8
OFF	ON	ON	10	0	25	20	10
ON	ON	ON	12	0	20	16	24

(*) Adds another credit for the second lap.

APPLICATION EXAMPLES

Example 1

Switzerland	SW1 =	OFF	SERIAL input. (5 FS via PIN 5) = (Channel 3)
	SW2 =	OFF	Input values x1 x2 — x5
	SW3 =		Not used
	SW4 =	OFF	EXTRA credit on the 20th pulse (=20FF)
	SW5 =	ON	
1 FF = 1 pulse	SW6 =	OFF	5 pulses / 1 credit.
	SW7 =	OFF	
	SW8 =	ON	
RESULTS:	5 FS / 1 credit; 20 FS / 5 credits		

Example 2

Sweden	SW1 =	OFF	SERIAL input. (5 Kr via PIN 5) = (Channel 3)
	SW2 =	OFF	Input values x1 x2 — x5
	SW3 =		Not used
	SW4 =	OFF	EXTRA credit on the 20th pulse (=20FF)
	SW5 =	ON	
1 Kr = 1 pulse	SW6 =	OFF	5 pulses / 1 credit.
	SW7 =	OFF	
	SW8 =	ON	
RESULTS:	5 Kr / 1 credit; 20 Kr / 5 credits		

Example 3

Norway	SW1 =	OFF	SERIAL input. (5 Kr via PIN 5) = (Channel 3)
	SW2 =	OFF	Input values x1 x2 — x5
	SW3 =		Not used
	SW4 =	ON	EXTRA credit on the 25th pulse (=20Kr)
	SW5 =	OFF	
1 Kr = 1 pulse	SW6 =	OFF	10 pulses / 1 credit.
	SW7 =	ON	
	SW8 =	ON	
RESULTS:	10 Kr / 1 credit; 25 Kr / 3 credits		

Example 4

Great Britain	SW1 =	OFF	SERIAL input. (10 Pen via PIN 8) = (Channel 6)
	SW2 =	OFF	Input values x1 x2 — x5
	SW3 =		Not used
	SW4 =	ON	EXTRA credits on the 5th pulse (=50 Pen)
	SW5 =	OFF	and 10th pulse (1 £)
1 Pen = 1 pulse	SW6 =	OFF	3 pulses / 1 credit.
	SW7 =	ON	
	SW8 =	OFF	
RESULTS:	30 Pen / 1 credit; 50 Pen / 2 credits; 1 £ / 5 credits		